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(54) Title: CARTON WITH TWO-STEP OPENING FEATURE DEFINING YIELDABLE DISPENSER FOR SELECTIVE REMOVAL AND RETENTION OF ARTICLES

(57) Abstract: A carton for dispensing and retaining articles such as cans or bottles is opened by removing a first detachable portion and then by at least partially detaching a second detachable portion to define an opening for dispensing the articles, and to define means for retaining articles in the carton after one or both of the detachable portions have been removed. Removal of the first detachable portion provides access to the second detachable portion to facilitate at least partial detachment thereof. The second detachable portion may be yieldable so as to variably and reversibly redefine or reconfigure the opening to facilitate removal of articles that are being dispensed, and to retain articles in the carton that are not being dispensed. The first detachable portion includes a tab or other grasping means to aid in tear initiation.

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**CARTON WITH TWO-STEP OPENING FEATURE DEFINING YIELDABLE
DISPENSER FOR SELECTIVE REMOVAL AND RETENTION OF ARTICLES**

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TECHNICAL FIELD

[0001] This invention relates generally to cartons for packaging multiple articles such as beverage cans or bottles, and more particularly, to a paperboard carton with a two-step opening feature for providing an article dispenser with a yieldable access opening through which one or more articles in the carton may be dispensed at once.

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BACKGROUND OF THE INVENTION

[0002] Cartons for encasing and dispensing multiple articles such as soft drink cans or bottles are useful for enabling consumers to transport, store, and access the articles for consumption. The consumer typically prefers the flexibility to easily access the articles one at a time. To that end, some cartons have dispensers which allow one or more articles to be removed, while continuing to encase the remaining articles. The consumer tears out a portion of the carton to form an opening from which articles may be dispensed.

[0003] Such beverage cartons with article dispensers are known in the art. One example is disclosed in U.S. Pat. No. 6,578,736 in which a removable section is disposed at one end of the carton. The removable section is defined by a tear line. To open the carton, a finger flap is pressed such that a portion of the removable section is separated from the carton. Then, the removable section is gripped and pulled outwardly, which causes the tear line to break all the way down to the bottom wall. In so doing, the removable section is allowed to swing down together with a part of the bottom end flap, which creates an access opening through which the cans in the carton are exposed. The opening is so dimensioned that at least part of the periphery of the opening serves as a can stopper and prevent the cans from undesirably rolling out of the carton through the opening.

[0004] However, the finger flap has sometimes been found not to be user-friendly because it is not easy to separate it from the carton wall. This is because the entire side carton wall may yield to the pressing force applied to the finger flap and, as a result, sufficient shearing stress is not induced along the tear line. Moreover, certain consumers (such as children) may not be

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able to apply sufficient force to initiate a tear to open the carton to retrieve an article. Furthermore, even when the finger flap successfully initiates separation of the removable section from the carton wall, the consumer must insert one or more fingers in the narrow space between that portion of the removable section and the remaining carton wall, which can sometimes cause the consumer to suffer pinched digits. Thus, tearing the carton to form the opening can be somewhat difficult, particularly if the consumer is unable to visibly distinguish the finger flap from the remainder of the frangible line so as to find the appropriate point at which to initiate the tear. Addition of a precut aperture such the insertion flap shown in U.S. Pat. No. 6,578,736 compromises the structural integrity of the carton and increases its susceptibility to infiltration of light, moisture, and dust, and thus, is not a beneficial solution.

[0005] What is needed, therefore, is a carton that is provided with an improved article dispenser that is convenient to use. Such a carton should have a user-friendly means for grasping and removing the removable portion, as well as a reliable article stopper.

SUMMARY OF THE INVENTION

[0006] The present invention advantageously reduces the effort required to access articles in a carton and improves the retention of articles remaining in the carton. More specifically, the present invention provides a carton with a dispenser having multiple detachable portions that border one another at one end of the carton. The detachable portions may be separately and at least partially detached from the carton to define an opening for dispensing articles and to restrain articles remaining in the carton.

[0007] Generally described, a plurality of panels are connected together to form the carton of the present invention. At least three of the panels are adjacent to one another. When the carton is erected, the panels cooperate to form carton walls for encasing a plurality of articles.

[0008] According to one aspect of the invention, the carton includes at least one first detachable portion that facilitates at least partial removal of at least one second at least partially detachable portion. The first detachable portion is a substantially integral portion of the carton that is formed from at least a portion of adjacent first and second carton walls.

After removal of the first detachable portion, at least one adjacent part of one or both of the first and second walls remains intact. Removal of the first detachable portion exposes at least

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one edge of the second detachable portion, which then can be used as a more convenient handhold for initiating and effecting at least partial removal of the second detachable portion.

[0009] In certain embodiments, the first detachable portion is a tear strip, the removal of which at least partially defines an opening for dispensing articles and facilitates access to the second detachable portion. The second detachable portion can be yieldable, thereby allowing selective removal of articles from the carton while preventing articles from undesirably rolling or falling out of the carton, and may be completely detached when it is no longer needed to retain articles in the carton. For example, the second detachable portion can function as a detachable retention means for yieldably restraining articles in an upper row of the carton. Completely detaching the second detachable portion defines at least one edge of an integral retention means, such as an article stopper comprising portions of an end and sides of the carton. In accordance with the previous example, such an article stopper may rigidly restrain articles in a lower row of the carton after articles in the upper row no longer require the support of the second detachable portion to avoid the risk of falling out.

[0010] The second detachable portion may be only partially detachable so as to become a yieldable portion that variably and reversibly reconfigures the opening, and retains the articles within the carton after the first detachable portion has been removed. The carton may include more than one second detachable portion, each functioning to restrain at least a portion of at least one article.

[0011] According to another aspect of the invention, the first detachable portion is defined by a first severance line that is readily or easily broken, such as a frangible line weakened by perforations or cuts to facilitate tearing or breaking along the frangible line. The first detachable portion is preferably sufficiently wide to define a space between the adjacent carton wall and at least one edge of the second detachable portion, with the space being adequate to accommodate insertion of one or all of the consumer's fingers so that the consumer can grasp the second detachable portion for complete or partial detachment thereof. The first detachable portion is preferably at least sufficiently long to expose at least one entire edge of the second detachable portion, so that the consumer can grasp and pull the entire edge to reduce the chance of inadvertently bifurcating the second detachable portion when defining or reconfiguring the opening in the carton by either removing or partially detaching the second detachable portion. In some embodiments, the first detachable portion may be

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positioned such that one lengthwise edge of the first detachable portion is defined by and coincident with at least a portion of an edge of one or more carton walls.

[0012] According to an aspect of certain embodiments of the invention, the second detachable portion is defined at least in part by the first severance line and a second severance line that enables the second detachable portion to be completely detached from the carton.

The second detachable portion may be completely detached from the carton while preserving the ability of the then open carton to restrain the articles remaining therein. In certain embodiments, the second detachable portion is formed at least in part from an end wall. The end wall is more precisely an end closure structure formed from end panels hingedly

connected to the carton walls. The first detachable portion may be detached from the carton without disturbing the integrity of at least a portion of the end wall. Thus, at least part of the end wall preferably remains in at least a partially upright position after the first detachable portion is detached and functions as an article retainer or stopper for blocking undesired exit of articles through the opening created by the detachment of the first detachable portion. In certain other embodiments, the second detachable portion is formed from a portion of two or more adjacent walls. Removal of the second detachable portion defines a rigid retention means defined by the remaining portions of the two or more adjacent walls.

[0013] According to an aspect of certain other embodiments of the invention, the second detachable portion is made partially detachable and yieldable by means of one or more separation means, such as severance lines, friction joints, perforations, tear tapes, or any other suitable separating mechanism that will be well known by those skilled in the art or is yet to be developed. Each separation means spans the distance from the first severance line to a wall adjacent to the first and second walls, and facilitates partial detachment or yielding movement of the second detachable portion. Thus, the second detachable portion is defined at least in part by the first severance line, by separation means, and by one or more fold lines that are integral to, or at an edge of an adjacent wall. Partial detachment frees the second detachable portion to yield so as to enlarge the opening when articles are being dispensed, and to reverse the enlargement by reducing the opening to prevent articles from falling through the dispenser opening when articles are not being dispensed. The reversal may be effected manually or automatically by means of the resilient memory of the carton material.

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[0014] According to another aspect of the invention, removal or repositioning of the second detachable portion defines or reconfigures an opening for dispensing articles from the carton.

[0015] According to yet another aspect of the invention, removal or repositioning of the second detachable portion defines or creates a retention means for retaining articles in the carton.

[0016] According to another aspect of the present invention, the carton is formed from a blank having a first severance line at one end of the blank for defining the first detachable portion, as well as a second severance line or severance means at the end of the blank that define the second detachable portion.

[0017] In certain embodiments, the first severance line is continuous and defines the first detachable portion as a relatively narrow and relatively long tear strip that is oriented transversely at least partially across the first side wall, completely across the top wall, and at least partially across the second side wall. At least a portion of one edge along the length of the first severance line is defined by and is coincident to the second severance line. The second severance line extends across at least a portion of an end flap hingedly connected to a first side wall, the second severance line originating on the distal edge and extending across the proximal edge of the first side end flap and onto the adjacent first side wall. The second severance line continues transversely from the first side wall, across the top wall, and then at least partially across the second side wall. The second severance line then turns and continues toward a second side end flap, terminating at the distal edge of the second end flap.

[0018] In certain other embodiments, the first severance line includes multiple frangible lines that extend across at least a portion of the second wall, which comprises end flaps and end wall panels. One such frangible line originates either on one side or on the distal end of its respective end flap and terminates on the other side of the end flap from which it originated. Another frangible line extends from the distal end of the end flap of the first panel onto the first panel and turns back to terminate at another point on the distal end of the end flap from which it originated. In certain embodiments, an additional frangible line extends from the distal end to the proximal edge of an end flap of the panel opposite the first panel. The frangible lines cooperate with one another when the carton is erected and the end flaps are folded together to define the first detachable portion.

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[0019] In these embodiments, the blank also includes a fold line extending across or along an edge of at least a portion of at least one panel that is adjacent to the first and second walls of the erected carton. The fold line defines an axis of motion around which the second detachable portion can yield after the second detachable portion has been partially detached via the separation means, the separation means extending from the first severance means to or substantially near an end of the fold line in the adjacent panel.

[0020] According to yet another aspect of the invention, the first detachable portion has a tear initiation means connected or adjacent to at least one end to facilitate removal of the first detachable portion. Suitable tear initiation means include, but are not limited to, a push tab, a pull tab, flap, loop, any combination of tabs, loops or flaps, or an equivalent structure for gripping or grasping an end of a relatively thin or narrow structure. In the exemplary embodiments, the tear initiation means is formed by any combination of cuts, scores, and half cuts, and is integral to a carton wall and disposed at an end of the tear strip. For example, the tear initiation means can comprise a score line forming a substantially semicircular or triangular region, although other shapes may be used, that is bisected by a cut line or a frangible line such that a finger could penetrate the carton by applying pressure at the bisecting line thereby folding back the segments of the bisected semicircular or triangular region, thereby accessing the adjacent end of the first detachable portion. Once the finger is inside the carton and in contact with the first detachable portion, the finger can hook underneath the first detachable portion to pull outwardly, or a finger and a thumb can grasp the end of the first detachable portion, thereby initiating a tear to remove the first detachable portion. As another example, the tear initiation means comprises a frangible line forming a substantially semicircular tab (although other shapes may be used) through which a finger hole is disposed, the finger hole being defined by a substantially circular cutout, half-cut line, or other frangible line, such that a finger can penetrate the carton through the cutout, or by applying pressure to the frangible line (thereby displacing the small substantially circular portion of the carton bounded by the frangible line). In these embodiments, the tab is integral to and is a continuous portion of the end of the first detachable portion. Thus, by grasping and pulling the tab via the finger hole, the consumer can remove the entire tear strip.

[0021] The foregoing has broadly outlined some of the more pertinent aspects and features of the present invention. These should be construed to be merely illustrative of some of the more prominent features and applications of the invention. Other beneficial results can be

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obtained by applying the disclosed information in a different manner or by modifying the disclosed embodiments. Accordingly, other aspects and a more comprehensive understanding of the invention may be obtained by referring to the detailed description of the exemplary embodiments taken in conjunction with the accompanying drawings, in addition to
5 the scope of the invention defined by the claims.

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BRIEF DESCRIPTION OF THE DRAWINGS

[0022] FIG. 1 is a plan view of a blank for forming the carton having a first detachable portion and a second detachable portion, according to one embodiment of the present invention.

5 [0023] FIG. 2 is a perspective view of the carton formed from the blank of FIG. 1, showing the detail of a grasping means.

[0024] FIG. 3 is a second perspective view of the carton formed from the blank of FIG. 1, showing removal of a first detachable portion.

10 [0025] FIG. 4 is a perspective view of a carton of the present invention formed from the blank of FIG. 1, the carton having been opened by removing a first and second detachable portion.

[0026] FIG. 5 is a plan view of an alternative embodiment of a blank having a first detachable portion and a second detachable portion.

15 [0027] FIG. 6 is a perspective view of a carton of the present invention formed from the blank of FIG. 5, having been opened by removing a first and second detachable portion.

[0028] FIG. 7 is a plan view of a third alternative embodiment of a blank having a first detachable portion and a second detachable portion, wherein the second detachable portion is yieldable.

[0029] FIG. 8 is a perspective view of a carton formed from the blank of FIG. 7.

20 [0030] FIG. 9 is a perspective view of the carton of FIG. 9, formed from the blank of FIG. 7, and opened by removing a first detachable portion.

[0031] FIG. 10 is a plan view of an embodiment of a blank for forming carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

25 [0032] FIG. 11 is a perspective view of a carton formed from the blank of FIG. 10.

[0033] FIG. 12 is a plan view of a blank for forming an alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

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[0034] FIG. 13 is a plan view of a blank for forming a third alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

5 [0035] FIG. 14 is a perspective view of a carton of the present invention formed from the blank of FIG. 12.

[0036] FIG. 15 is a plan view of a blank for forming a fourth alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

10 [0037] FIG. 16 is a perspective view of a carton of the present invention formed from the blank of FIG. 15.

[0038] FIG. 17 is a plan view of a blank for forming a fifth alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

15 [0039] FIG. 18 is a perspective view of a carton of the present invention formed from the blank of FIG. 17.

[0040] FIG. 19 is a perspective view of the carton of FIG. 12 with a fully detachable portion detached therefrom to define an opening for dispensing articles from the carton.

20 [0041] FIG. 20 is a perspective view of the carton of FIG. 12, opened by removing a fully detachable portion, and having yieldable portions partially detached to variably and reversibly enlarge the opening to facilitate dispensing articles from the carton.

[0042] FIG. 21 is a plan view of one embodiment of a blank for forming a sixth alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and partially detachable.

25 [0043] FIG. 22 is a perspective view of a carton of the present invention formed from the blank of FIG. 21.

[0044] FIG. 23 is a perspective view of the carton of FIG. 22, opened by removing a detachable portion, and having a yieldable portion partially detached to variably and reversibly enlarge the opening to facilitate dispensing articles from the carton.

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[0045] FIG. 24 is a plan view of one embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and either partially or completely detachable.

[0046] FIG. 25 is a perspective view of a carton formed from the blank of Fig. 24.

5 [0047] FIG. 26 is a plan view of an alternative embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and either partially or completely detachable.

[0048] FIG. 27 is a perspective view of a carton of the present invention formed from the blank of Fig. 26.

10 [0049] Fig. 28 is a plan view of an embodiment of a carton having a first detachable portion and at least one second detachable portion that is yieldable and at least partially detachable.

[0050] FIG. 29 is a perspective view of a carton of the present invention formed from the blank of Fig. 28.

15 [0051] FIG. 30 is a perspective view of the carton of FIG. 27 with a portion thereof detached therefrom to define an opening for dispensing articles from the carton.

[0052] FIG. 31 is a perspective view of the carton of Fig. 27 having a second portion partially detached from the carton to enlarge the opening for dispensing articles from the carton.

20 [0053] FIG. 32 is a perspective view of the carton of Fig. 27 having the second portion completely detached from the carton to redefine the opening for dispensing articles from the carton.

DETAILED DESCRIPTION

25 [0054] Referring now to the drawings in which like numerals indicate like elements throughout the several views, the drawings show exemplary embodiments of cartons that illustrate certain of the various aspects of the present invention. In the embodiments described herein, the cartons are for dispensing articles such as beverage cans. Generally described, the cartons are formed from a foldable sheet material such as paperboard, corrugated board, plastic, or the like.

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[0055] Referring to a first embodiment shown as FIG. 1, carton 200 is formed from a paperboard blank 100. The blank 100 includes at least four primary panels for forming the carton 200. The panels of the blank 100 are a first bottom panel 102, a first side panel 104, a second side panel 106, a top panel 108, and a second bottom panel 110. The panels 102, 104, 106, 108, and 110 of the blank 100 are hingedly connected to one another. The bottom panel 102 is hingedly connected to the first side panel 104 by fold line 112. The first side panel 104 is then hingedly connected to the top panel 108 by fold line 114. The second side panel 106 is then hingedly connected to the top panel 108 by fold line 116. The second bottom panel 110 is then hingedly connected to the second side panel 106 by fold line 118. In the illustrated embodiments, a unitary blank is used to form a single carton, although it should be recognized that two or more blanks may be employed for example, to provide the dispenser structure described in more detail below.

[0056] Each of the panels 102, 104, 106, 108, and 110 includes opposing end flaps or end wall panels defined in part by transverse fold lines disposed in series along each longitudinal edge of the blank 100. When the carton 200 is erected, the end flaps and end wall panels cooperate to form an end closure structure. Each end closure structure is identical and therefore like references have been used, with "a" or "b" affixed to distinguish one end of the carton from the other. First bottom panel 102 is hingedly connected to end flap 120a along a fold line 122a. First side panel 104 is hingedly connected to end wall panel 124a along fold line 126a. Second side panel 106 is hingedly connected to end wall panel 128a along fold line 130a. Top panel 108 is hingedly connected to end flap 132a along fold line 134a. Second bottom panel 110 is hingedly connected to end flap 136a along fold line 138a.

[0057] In order to erect the carton 200, first bottom panel 102 is glued or is otherwise secured to second bottom panel 110, to form the composite bottom wall 102/110 of open ended tubular carton 200. After the articles are grouped and loaded through either or both of the open ends of the carton 200, the end flaps and end wall panels are folded and secured together to form opposing end closure structures of carton 200. End flap 120a is secured to end flap 136a whereas end wall panel 124a is secured to end wall panel 128a. Additionally, end flaps 120a, 132a, and 136a may optionally support the integrity of the carton by being secured to end wall panel 124a and to end wall panel 128a. The end flaps 120b, 132b and 136b, and end wall panels 124b and 128b, cooperate similarly to form the opposing end

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closure structure. Referring now to FIG. 2 (showing the carton 200 in an unopened condition), the end closure structures form respective end walls 202a and 202b (not shown).

[0058] The cartons illustrated in the drawings are adapted to hold a group of similarly dimensioned, preferably cylindrical articles (such as cans or bottles), in one or more
5 vertically arranged rows. The articles in each row are disposed on their sides in a side-by-side parallel fashion. Referring again to FIG. 2, side walls 204 and 206 are disposed alongside the ends of the articles of the group, while each end wall 202a and 202b of the carton is disposed adjacent to the side walls of the respective endmost articles.

[0059] Referring again to FIG. 1, the blank 100 includes a frangible severance line 140,
10 which when the carton is erected, defines a detachable portion T. To define detachable portion T, the severance line 140 extends substantially diagonally from the distal edge of end wall panel 124a towards top panel 108, crosses fold line 126a onto side panel 104, turns to longitudinally traverse a portion of side panel 104, then turns directly toward top panel 108, crossing fold line 114 to transversely traverse top panel 108, then crosses fold line 116 onto
15 side panel 106, turns directly toward end wall panel 128a, crosses fold line 130a, extends substantially diagonally toward end flap 132a and terminates at the distal edge of end wall panel 128a. It is contemplated that the severance line 140 includes, but is not limited to, a line of perforations, a score line, a line of short slits, a line of half cuts, a single half cut, any combination of slits, score lines, and half cuts, or the equivalent.

20 [0060] The blank 100 further comprises a suitable known handle H to allow the user to carry the carton.

[0061] The blank 100 also includes at least one relatively long and relatively narrow removable tear strip 142 defined by a second frangible severance line 144, at least a portion of which is coincident with severance line 140. In preferred embodiments, the portion of
25 severance line 144 defining one entire side of tear strip 142, i.e., a segment that spans the entire length of tear strip 142, is coincident with the upper edge 146 of severance line 140 as viewed in FIG. 1.

[0062] The blank 100 preferably includes one or more tear or severance initiation means 148, such as push tabs that function as a grasping means for grasping the end of the tear strip,
30 shown in more detail in FIGs. 2 and 3 and described below.

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[0063] To open the carton of FIG. 2, the user takes hold of tear strip 142 via severance initiation means 148. Once the user has grasped the end of the tear strip 142, the user pulls the tear strip up a portion of the side wall 204, over the top wall 208, and down the side wall 206 until the tear strip 142 is completely detached from the carton 200, as shown in FIG. 3, leaving a space or gap having the width of tear strip 142.

[0064] FIG. 3 also shows the detail of a severance initiation means 148. The severance initiation means 148 shown comprises a score or fold line 350 forming a substantially semicircular or triangular region (although other shapes may be used) that is bisected by a cut line or other frangible line 352, although any suitable configuration can be utilized to enable the user to insert at least one finger or otherwise gain access to grip an end of the tear strip 142. Applying pressure to cut line 352 causes flaps 302 and 304 to fold into the carton, thereby creating a finger hole through which an inserted finger can access and pull an end of the tear strip 142 to completely remove the tear strip 142. Preferably, the width of the space formed by removing the tear strip 142 is sufficient to enable the user to then insert as many as all of the user's fingers into the space in order to grasp the upper edge 146 of the detachable portion T. The user then pulls the detachable portion T toward end wall 202a, and then downwardly until the entire detachable portion T has been completely detached from carton 200, as shown in FIG. 4.

[0001] Detachment of the detachable portion T defines opening O and forms side wall recesses 404 and 406 that are not identical to one another. Rather, the lowest point of side wall recess 404 is distanced from composite bottom wall 102/110 by less than or equal to half the diameter of an article C. The lowest point of side wall recess 406 is distanced from composite bottom wall 102/110 by greater than or equal to the diameter of an article C. Thus, because of the depth of recess 404 a user can easily access the articles on the lowermost row of the carton 200 by grasping the article C at the end of the article that is adjacent to side wall 204. The relatively shallower recess 406 provides additional stability and capacity for retaining articles in the carton 200.

[0002] The lower portion of the front end wall 202a forms a stopper wall 412 that extends upwardly from the composite bottom wall 102/110 between the side wall panels 104 and 106. The upper edge 414 of the stopper wall 412 as defined by the end wall section of severance line 140 slopes substantially diagonally from its lowest point (less than or equal to one half

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the diameter of one article) at fold line 130a to its highest point (greater than or equal to the diameter of one article) at fold line 126a. Thus, the stopper wall 412 prevents the articles C in the lowermost row from inadvertently exiting the carton 200 before intended removal.

[0003] FIGs. 5 and 6 illustrate an alternative embodiment of a blank 500 for forming another carton 600 of the present invention, and like references have been used with the prefix "5" in FIG. 5, and the prefix "6" in FIG. 6. The blank 500 is similar to blank 100, described above, except that the blank 500 includes a severance line 540, which when the carton is erected, defines a detachable portion T2. To define detachable portion T2, the severance line 540 curves from the distal edge of end wall panel 524a towards but does not reach first bottom panel 502, crosses fold line 526a onto side panel 504, turns to longitudinally traverse a portion of side panel 504, then turns directly toward top panel 508, crossing fold line 514 to transversely traverse top panel 508, then crosses fold line 516 onto side panel 506, turns directly toward end wall panel 528a, and then curves toward but does not reach top panel 508 as it crosses fold line 530a and terminates at the distal edge of end wall panel 528a.

[0004] The blank 500 further comprises a suitable known handle H2 to allow the user to carry the carton.

[0005] Referring now to FIG. 6, the carton 600 differs from carton 200 primarily in that carton 600 has an opening O2 that is shaped differently than opening O described above. The segment of the severance line 540 that traverses side wall 606 (hereinafter referred to as a "side wall severance line") defines a recess 606 that has a bottom edge 608 that is parallel to the adjacent side edge of the composite bottom wall 502/510, the bottom edge 608 preferably being at a distance R from the composite bottom wall 502/510, where R is less than or equal to one half the diameter of each of the articles C enclosed by the carton 600. Thus, the depth of the recess 606 enables the user to gain access to the articles C in the lowermost row by gripping both ends each article for removal. The side wall severance line extends to the connection of the respective side wall 606 with end wall 602a (not shown) at a distance above the composite bottom wall 502/510 that is generally greater than or preferably substantially equal to one half the diameter of each one of the articles C enclosed by the carton 600. Preferably, the distance between vertical edge 610 of the recess 606 and the end wall 602a is greater than twice the diameter of a single article C, and is positioned so as to expose at least

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two articles C on the lowermost row, thereby facilitating removal of articles C from the lowermost row in the article group.

[0006] By removing or detaching the detachable portion T2, the end portion of the carton is exposed to provide dispenser opening O2 for the articles so that the user can gain access to the articles C in the uppermost row. Furthermore, the lower portion of the front end wall 602a forms a stopper wall 612 that extends upwardly from the composite bottom wall 502/510 between the side walls 604 and 606. The upper edge 614 of the stopper wall 612 is defined by the end wall section of severance line 540 so that the stopper wall 612 alone is capable of inhibiting the articles C in the lowermost row or rows from inadvertently exiting the carton 600 before intended removal, and so that the contents of the carton 600 are easily viewed through the dispenser opening O2. The highest point along the upper edge 614 is spaced at a distance S above the composite bottom wall 502/510, where S is greater than or preferably substantially equal to the diameter of one article C. The distance S is greater than the distance R.

[0007] FIGs. 7, 8, and 9 illustrate an alternative embodiment of a blank 700 for forming another carton 800 of the present invention. The blank 700 is similar to blank 100, but includes a relatively larger first detachable portion shown as tear strip 742. The tear strip 742 is defined by a severance line 744 and is positioned such that its one side edge that is coincident with the severance line 740 comprises a portion of fold line 724a, the entirety of fold line 732a, and a portion of fold line 738a. Thus the upper edge 746 of detachable portion T3 also comprises the same portion of fold line 724a, the entirety of fold line 732a, and the same portion of fold line 738a.

[0008] To define second detachable portion T3 (which comprises at least portions of end wall panels 724a and 736a and end flap 732a), the severance line 740 curves from the distal edge of end wall panel 724a towards (without reaching) bottom panel 702, turns to follow fold line 724a toward top panel 708 along an edge of side panel 704, follows fold line 732a toward side panel 706 along an edge of top panel 708, follows a portion of fold line 738a toward edge flap 710, and then turns toward the distal edge of end wall panel 736a, while curving towards end flap 732a. As shown in FIG. 8, when carton 800 is erected, detachable portion T3 comprises an upper portion of the end closure structure comprising end wall 802a.

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[0009] Blank 700 also includes an alternative severance initiation means 748, which is a tab 750 through which is disposed a finger hole 752 that is defined by a cut or severable line 754. Thus, the grasping means 748 is essentially a loop. Although the tab 750 shown is semicircular or rounded, any shape through which the finger hole 752 of suitable size can be disposed can be utilized. To remove the tear strip 742, the user simply inserts a finger into finger hole 752, preferably displacing the center section, and pulls the tear strip 742, which is integral to the grasping means 748.

[0010] The blank 700 further comprises a suitable known handle H3 to allow the user to carry the carton.

[0011] Referring now to FIG. 9, removal of tear strip 742 creates opening O3, through which the endmost article or articles on the uppermost row are made accessible. Removal of tear strip 742 also defines stopper wall 912, which in combination with detachable portion T3, has the advantage of being of sufficient height and stability to constrain even the first article after removal of the tear strip 742. After the first article has been taken out of the carton 800, opening O3 preferably can be enlarged by removal of detachable portion T3 along tear line 740.

[0012] This embodiment has the added advantage of score lines 756 and 758 on end wall panel 724a and of score lines 760 and 762 on end wall panel 736a. These score lines cause stopper wall 912 and detachable portion T3 to yield so as to flex or bow outward in such a manner as to present the articles for easier access by the user. Score lines 758 and 760 are substantially parallel to the portions of severance line 740 that cross the respective end wall panels 724a and 736a. Score line 756 extends from the proximal end of end wall panel 724a and curves away from score line 758, terminating on the side of end wall panel 724a. Score line 762 extends from the proximal end of end wall panel 736a and curves away from score line 760, terminating on the side of end wall panel 736a.

[0013] FIGs. 10 through 23 illustrate exemplary embodiments of cartons having a first detachable portion that defines an opening for removing articles, and at least one second detachable portion that is yieldable and at least partially detachable so as to variably and reversible reconfigure the opening and to retain articles in the carton.

[0014] Referring to FIG. 10, the blank 1000 includes frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076, which when the carton 1100 is erected, cooperate to form a single

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continuous severance line 1140 that defines a fully detachable portion 1050 (shown in FIG. 11), which extends partially across top wall 1108 and end closure structure 1102a. The severance line 1140 also extends at least partially across the top wall 1108 and end closure structure 1102a. Frangible line 1044 defines the upper section of detachable portion 1050, which preferably includes one or more horizontal score lines 1052 to facilitate the initiation of a tear. Each of the frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076 may be a line of severance lines or any other weakened line that facilitates separation along the frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076. It is contemplated that the severance line 1140 includes, but is not limited to, a line of perforations, a score line, a line of short slits, a line of half cuts, a single half cut, any combination of slits, score lines, and half cuts, or the equivalent.

[0015] To define portion 1050, the frangible line 1044 extends from the distal end of end flap 1032a, across fold line 1034a, onto the top panel 1008, and then turns back without intersecting itself to again cross fold line 1034a and to terminate at another point on the distal end of the same end flap 1032a. Therefore, frangible line 1044 is intersected twice by fold line 1034a. Frangible lines 1042 and 1046 extend at least partially across each of the end wall panels 1024a and 1028a of opposing side panels 1004 and 1006, originating on one side edge each respective end wall panel and terminating on the opposite side edge of the end wall panel from which it originated. Each of frangible lines 1040 and 1048 extends from the respective distal end of end flap 1020a or 1036a to its adjacent panel 1002 or 1010. Frangible lines 1074 and 1076 free the lower end of detachable portion 1050.

[0016] Portions of the frangible line 1044 across end flap 1032a and adjacent fold line 1034a are preferably arched or curved somewhat inward relative to one another so that the portion 1050 is somewhat narrower at the distal ends of end flap 1032a. Referring now to FIG. 11, when carton 1100 is erected and end wall panels 1024a and 1028a are folded and secured to one another, portion 1050 cooperates with portions 1054, 1056, 1058, and 1060 along frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076 to define first detachable portion 1050. The frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076 combine to define a continuous or endless frangible line 1140 about the periphery of the fully detachable portion 1050 of the carton 1100.

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[0017] As can be seen in FIG. 11, yieldable portions 1142 and 1144 that facilitate retention and removal of articles from the carton 1100 are each formed from a portion of end closure structure 1102a, top wall 1108, and a respective adjacent side wall 1106 or 1104. At least one separation means 1062, 1064, 1066, and 1068 extends from the continuous frangible line 1140 formed by frangible lines 1040, 1042, 1044, 1046, 1048, 1074, and 1076 to the side wall 1104, 1106 adjacent to each respective yieldable portion 1142, 1144, thereby enabling partial detachment of the yieldable portion 1142, 1144 of the carton 1100.

[0018] Each separation means 1062, 1064, 1066, and 1068 is positioned at or near a natural stress point that would occur on a carton having no separation means if a user were to attempt to remove an article through the opening formed by removal of fully detachable portion 1050. In preferred embodiments, the dimensions and positioning of partially detachable portions 1142, 1144 are also related to the dimensions of the articles (not shown) enclosed within carton 1100. Each of partially detachable portions 1142, 1144 has a depth, as defined as the distance D1 from the respective separation means 1064, 1066 to the end closure structure 1102a, measured along respective fold lines 1014, 1016. The distance D1 is preferably less than or substantially equal to the diameter of one cylindrical article. Each of partially detachable portions 1142, 1144 has a height that is defined as the distance D2 from the respective separation means 1062, 1068 to the top wall 1108, as measured along fold line 1026a, 1030a. The distance D2 is preferably also less than or substantially equal to the diameter of one cylindrical article. It should be noted that the dimensions of the partially detachable portions of the embodiments shown in FIGs. 14, 16, 18, 19, 20, and 22 are similarly determined.

[0019] Partial detachment of yieldable second detachable portions 1142, 1144 allows movement of thereof along fold lines 1070, 1072 in each respective side wall 1104, 1106. Partially detachable yieldable portion 1142 is defined by frangible line 1046, separation means 1068, fold line 1072, separation means 1066, and a portion of frangible line 1140. Similarly, partially detachable yieldable portion 1144 is defined by frangible line 1042, separation means 1062, fold line 1070, separation means 1064, and a portion of frangible line 1140.

[0020] In a variation of the embodiment shown in FIGs. 10 and 11, additional yieldable portions can be similarly formed from the end closure structure 1102a, bottom wall

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1002/1010, and the adjacent side walls 1104, 1106 to facilitate removal of articles from carton 1100 from below.

[0021] As shown in FIG. 12, blank 1200 is an alternative embodiment for forming a carton 1300 having a first detachable portion 1250 and at least one second detachable portion 1342, 1344 that is yieldable and partially detachable. At least a section of the first detachable portion 1250 is shaped differently than the corresponding section of first detachable portion 1050 described above. The blank 1200 is similar to blank 100, described above, except that frangible line 1244 defines a blunt upper edge as opposed to the peaked upper edge defined by frangible line 1044, and that a single fold line 1252 extending across the upper section of fully detachable portion 1250 aids in tear initiation and in detachment. The yieldable portions defined by frangible lines 1240, 1242, 1244, 1246, and 1248 also have a different shape due to the change in shape of severance line 1440 (shown in FIG. 14).

[0022] FIG. 13 illustrates an alternative embodiment 1300 of blank 1200. First detachable portion 1350 defined by frangible lines 1340, 1342, 1344, 1346, and 1348 has the same shape as fully detachable portion 1250 described above. The blank 1300 is similar to blank 1200, described above, except that only two separation means 1364, 1366 are required to partially detach opposing yieldable portions because fold line 1370 and fold line 1372 each extend completely across respective side panels 1304 and 1306. Fold line 1370 extends from separation means 1364 across side panel 1304, and terminates at the intersection of fold lines 1326a and 1312. Fold line 1372 extends from separation means 1366 across side panel 1306, and terminates at the intersection of fold lines 1330a and 1318. This alternative creates potentially larger yieldable portions, which requires less effort and fewer steps on the part of the consumer to partially detach each yieldable portion. In a variation of this embodiment, additional separation means may be provided along the fold lines 1322a and 1338a. At least one fold line 1352 may extend across the upper section of the first detachable portion 1350 to facilitate initiation of a tear.

[0023] FIGs. 15 and 16 illustrate a blank 1500 for forming the carton 1400 having a first detachable portion 112 the removal of which creates an opening that has a creative shape that may approximate a decorative design such as a trademarked logo or the silhouette of an object. The blank 1500 is similar to blanks 1000, 1200 and 1300, described above, except that frangible lines 1540, 1542, 1544, 1546, 1548, 1574, and 1576 cooperate when the carton

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1600 is erected to form continuous frangible line 1640, the shape of which forms the decorative design or creative shape. In yet another alternative embodiment shown in FIGs. 17 and 18, a blank 1700 for forming carton 1800 includes a fully detachable portion 1750 that is detached by means of frangible lines 1740, 1742, 1744, and 1746, which cooperate when
5 carton 1800 is erected to form continuous frangible line 1840 which defines fully detachable portion 1750. This embodiment also includes yieldable portions 1842, 1844 that are formed only from portions of end flaps and end wall panels comprising end closure structure 1802a. Referring to FIG. 18, to form the end closure structure 1802a, end flap 1720a is folded along fold line 1722a into an upward vertical position. End flap 1732a is folded along fold line
10 1734a into a downward vertical position. End wall panels 1724a and 1728a are folded toward one another along respective fold lines 1726a and 1730a to close the carton 1800. In these positions, the end wall panels 1724a and 1728a are glued together in an overlapping relationship to traverse the end of the carton. Thus, end wall panels 1724a and 1728a almost completely overlap top and bottom end flaps 1732a and 1720a. However, end flap 1732a is
15 notched at each side edge to prevent undesirably gluing the notched portions of top end flap 1732a to the End wall panels 1724a and 1728a, thereby automatically freeing the notched portions of top end flap 1732a that remain after the detachable portion 1750 has been removed. End wall panel 1724a is preferably secured to a portion of composite end flap 1720a by means of an adhesive. Similarly, end wall panel 1728a is also preferably secured to
20 a portion of the end flap 1720a.

[0024] Separation means 1764 and 1766 extend from severance line 1840 and terminate at respective fold line 1726a, 1730a bordering the side wall 1806 or 1804 that is adjacent to each yieldable portion 1842, 1844. Separation means 1764 and 1766 thereby enable variable and reversible movement of yieldable portions 1842, 1844 along the hinged edge that joins
25 the remaining section of respective end wall panel 1724a, 1728a to the adjacent side wall 1704, 1706.

[0025] According to an aspect of this embodiment, yieldable portions 1842, 1844 are preferably partially detachable and therefore made yieldable somewhat automatically. The consumer first removes fully detachable portion 1750 via severance line 1840. In the version
30 of the embodiment that is shown in the Figures, the consumer may utilize tear initiation means 1748 to grasp and remove fully detachable portion 1750. At this point, the carton 1800 is open and the endmost article is exposed to the consumer. Upon grasping the endmost

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article, the consumer preferably pulls the article out of the opening thereby displacing the yieldable portions 1842, 1844 outwardly. When the consumer is removing articles from the carton 1800, the yieldable portions 1842, 1844 yield so as to enlarge the opening to allow release of the articles. However, once an article has been removed, the yieldable portions 5 1842, 1844 revert back into substantially the original position to retain the remaining articles in the carton 1800.

[0026] It will be appreciated that composite end flap 1720a of carton 1800 includes a notch 1770 that may be substantially semicircular, and which remains after the fully detachable portion 1750 has been removed to serve at least in part to provide an additional access point 10 for a consumer to insert a thumb or finger to aid in grasping an article from the bottom of the carton 1800, and also serves restrain articles in carton 1800 in conjunction with yieldable portions 1842, 1844 and the lower portions 1846, 1848 of end wall panels 1724a and 1728a that remain after fully detachable portion 1750 has been removed. It should also be noted that upper end flap 1732a is notched on either distal corner to minimize the overlap and to 15 prevent undesired adhesion of the upper end flap 1732a to yieldable portions 1742, 1744. Thus, when the consumer first removes an article from the newly opened carton 1800, a minimal amount of force is required to partially detach the yieldable portions 1742, 1744 due to the minimal overlap and to separation means 1764, 1766.

[0027] The separation means 1764 and 1766 are positioned at or near natural stress points 20 that would occur on a similar carton having no separation means if a user were to attempt to remove an article through the opening formed by removal of fully detachable portion 1750. In preferred embodiments, the dimensions and positioning of yieldable portions 1742, 1744 are also related to the dimensions of the articles enclosed within the carton 1800. Each of yieldable portions 1742, 1744 has a height that is defined as the distance D2 from the 25 respective separation means 1764, 1766 to the top wall 1808, as measured along fold lines 1726a, 1730a. The distance D2 is preferably less than or substantially equal to the diameter of one cylindrical article.

[0028] Removal of first detachable portion 1750 from carton 1800 defines an opening for dispensing articles and defines an edge of yieldable portions 1842, 1844 for selectively 30 retaining or facilitating dispensing of articles. Upon removing detachable portion 1050, the article C is prevented from accidentally rolling out of the carton 1900 through the opening by

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yieldable portion 1142 and by yieldable portion 1144, as shown in FIG. 19. The lower article C2 is restrained by the lower portion of the end closure structure 1102a that remains after the detachable portion 1050 has been removed. As shown in FIG. 20, an endmost article C may be removed through the opening defined by removal of detachable portion 1050 (not shown) as defined by continuous frangible line 1140, and reconfigured by repositioning yieldable portions 1142, 1144 so as to enlarge the opening.

[0029] Separation means 1062, 1064, 1066, 1068 are preferably extensively more weakened than the severance line 1140 to allow easier separation of the partially detachable portions 1142, 1144 from the adjacent walls. As shown in FIG. 20, the partially detachable portions 1142, 1144 may then be pivoted around the axis of the respective fold line 1072, 1070 to variably and reversibly enlarge the opening to facilitate removal of the endmost article from the carton. Thus, the partially detachable portions 1142, 1144, when pivoted back to the initial position shown in FIG. 18, can again restrain the remaining articles in the carton.

[0030] FIGs. 21 through 23 demonstrate that a first detachable portion advantageously can be combined with a single second detachable portion that is yieldable, and with a rigid retention means.

[0031] The blank 2100 includes frangible severance lines 2122a, 2142, 2144, 2146, 2148 and 2176 which when the carton is erected, form a continuous frangible severance line 2240 (shown in FIG. 22) that defines a detachable portion 2150. Fold line 2122a also functions as a severance line for removal of detachable portion 2150, and hence is also referred to as severance line 2122a. The severance line 2142 extends from the intersection of fold line 2126a and the proximal edge of end wall panel 124a, and terminates on the side of end wall panel 2124a that is adjacent to end flap 2132a. One skilled in the art will recognize that the curvature, shape, and/or orientation of severance line 2142 is preferably determined in part to optimally retain articles in the carton 2200, and optionally, is designed to facilitate the linear application of the necessary adhesive at predefined intervals along the end flaps 2120a/2136a, 2132a and end wall panels 2124a, 2128a of the carton 2200, using the optimal number of adhesive applicators such as glue guns mounted on automatic packaging machinery. Any curvature, shape, or orientation of severance line 2142 that accomplishes one or both of these objectives can be used. Severance line 2144 extends from the distal edge of end flap 2132a across fold line 2134a, onto top wall 2108, and turns back to cross fold line 2134a again

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without crossing over itself, to terminate at another point on the distal edge of end flap 2132a. Portions of the severance line 2144 across end flap 2132a and adjacent fold line 2134a are preferably arched or curved somewhat inward relative to one another so that the portion 2144 is narrowest at the distal ends of end flap 2132a. Severance line 2146 extends transversely across end wall panel 2128a. Severance line 2148 extends longitudinally from the distal edge of end flap 2136a to the proximal edge of end flap 2136a, terminating at fold line 2138a. Severance line 2176 is preferably coincident with a portion of fold line 2138a.

[0032] In certain embodiments, to facilitate removal of a portion of end flap 2136a along with detachable portion 2150, and to discourage separation of the adhesive or other means used to secure end flap 2136a to end flap 2120a, severance line 2148 may be relatively weaker than the other severance lines and/or the adhesive may be relatively stronger than severance line 2148.

[0033] The blank 2100 further comprises a suitable known handle H to allow the user to carry the carton. Certain embodiments also include one or more horizontal score lines such as fold line 2152 to facilitate the initiation of a tear for detachment of detachable portion 2150.

[0034] In certain embodiments, the dimensions and positioning of the yieldable portion 2204 are also related to the dimensions of the articles enclosed within carton 2200. Yieldable portion 2242 has a depth, as defined as the distance D1 from the separation means 2164 to the end wall 2202a, measured along fold line 2114. The distance D1 is preferably less than or substantially equal to the diameter of one cylindrical article. Yieldable portion 2242 has a height that is defined as the distance D2, which is preferably equal to at least a portion of the total height of the carton 2200, and further, is preferably equal to the diameter of one cylindrical article multiplied by the number of rows of articles in the article group enclosed by the carton 2200.

[0035] As can be seen in FIG. 23, partial detachment of yieldable portion 2242 allows movement of thereof along fold line 2170 (shown in FIGs. 21 and 22) in the respective side wall 2204, thereby facilitating access to an end of an article for removal of that article. The yieldable portion 2242 of the retention means is defined by at least a portion of severance line 2142, separation means 2164, and fold line 2170, and a portion of severance line 2144. Rigid portion 2226 reinforces the carton 2200 and provides constant article retention by

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maintaining unyielding hinged connections with top wall 2208 and composite bottom wall 2102/2110.

[0036] According to an aspect of the invention, yieldable portion 2242 may be partially detachable and therefore made yieldable somewhat automatically. The consumer first
5 removes detachable portion 2150 via continuous frangible line 2240. At this point, the carton 2200 is open and the endmost article is exposed to the consumer. Upon grasping the endmost article, the consumer preferably pushes the article toward the yieldable portion 2242, thereby displacing the yieldable portion 2242 outwardly via separation means 2208, and along fold line 2170. When the consumer is removing an article from the carton 2200, the yieldable
10 portion 2242 thus yields so as to enlarge the opening to allow release of the articles. The rigid portion 2226 at the same time retains the next article in the carton while the first article is being removed. The fold line 2170 is preferably scored only as deeply as necessary to define the fold line, facilitate yielding of the yieldable portion 2242, and to preserve the resiliency and memory of the side wall 2204 such that the yieldable portion 2242 springs
15 back into place before the next article has the opportunity to escape the rigid portion 2226 of the retention means. Thus, once an article has been removed, the yieldable portion 2204 reverts back into substantially the original position to retain the remaining articles in the carton 2200. Separation means 2164 is preferably extensively more weakened than the remainder of the continuous frangible line 2240 to allow easier separation of the partially
20 detachable yieldable portion 2242 from the side wall 2204. As shown in FIG. 23, the partially detachable yieldable portion 2204 may then be pivoted around the axis of the fold line 2170.

[0037] Removal of detachable portion 2150 from carton 2200 defines an opening for dispensing articles. For example, as shown in FIG. 23, an endmost article on the uppermost
25 row of the article group may be removed through the opening defined by removal of detachable portion 2150 as defined by continuous frangible line 2240. The article is prevented from accidentally rolling out of the carton through the opening by yieldable portion 2242 at one end of the article and by rigid portion 2226 at the opposite end of the article. An article on the lowermost row is restrained by the lower portion of the rigid portion 2226.

30 [0038] Each exemplary carton 200, 600, 800, 1100, 1400, 1600, 1800, 2200 described herein includes at least three adjacent carton walls. A detachable portion 142, 542, 742, 1050, 1250,

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1350, 1550, 1750, 2150 defined by a severance line is formed at least from the first and second walls. The first wall may be an end wall or top wall. The second wall may be a top wall or side wall. The third wall may be a side, top or end wall. In certain embodiments, at least one separation means extends from the severance line to the third wall to facilitate yielding movement of a yieldable second detachable portion of the carton, adjacent to the removable portion. The yieldable portion is at least partially detachable and is defined at least in part by the at least one of separation means and in part by a fold line that is formed in or at an edge of the third wall. The separation means may be a severance line or a friction joint between two adjacent walls. In certain embodiments, the first detachable portion extends into a fourth wall that is opposite the second wall.

[0039] However, it should be understood that the orientation of the elements can be varied according to the needs of the consumer, particularly with respect to configuration of storage and refrigeration units. As an example, depending on the application, the first detachable portion of a carton may extend across a side and an end panel, and one or more yieldable portions may be hingedly connected to a top panel and an end panel. Furthermore, carton 2200 demonstrates that a single yieldable portion formed substantially on one side of a carton is effective to dispense and retain articles in the carton.

[0040] By referring to FIGs. 24 through 32, it will be appreciated that a first detachable portion may be defined by a first severance line, and that a second detachable portion may be defined by any combination of elements, including severance lines, separation means, and fold lines, so that the second detachable portion may be made fully detachable or partially detachable and yieldable about a fold line or other means for achieving flexibility.

[0041] Generally described, the cartons 10, 12 and 14 are formed from a foldable sheet material such as a paperboard blank. Carton 10 is formed from a paperboard blank 16 configured as shown in FIG. 24. The blank 16 includes at least four primary panels for forming the carton 10. The panels of the blank 16 are a bottom panel 18, a first side panel 20, a second side panel 22, and a top panel 24. As shown in FIG. 24, the panels of the blank 16 are hingedly connected in series to one another. The bottom panel 18 is hingedly connected to the first side panel 20 by fold line 30. The first side panel 20 is then hingedly connected to the top panel 24 by fold line 32. The second side panel 22 is then hingedly connected to the top panel 24 by fold line 34.

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[0042] Each of the panels 18, 20, 22 and 24 include opposing end flaps defined by transverse fold lines 26 and 28. Fold lines 26 and 28 each extend the full length of the blank 16. First side panel 20 includes opposing end flaps 38 and 40 and second side panel 22 includes opposing end flaps 42 and 44. In order to erect the carton 10, bottom panel 18 is glued or is otherwise secured to side panel 22 by edge flap 28, hingedly connected to second side panel 22 by fold line 36, to form an open ended tubular carton 10. After the articles are grouped and loaded through either or both of the open ends of the carton 10, the end flaps are folded and secured together to form opposed end closure structures of the carton 10. End flap 40 is secured to end flap 44 whereas end flap 38 is secured to end flap 42.

[0043] Portions 54 and 56 are similarly configured relative to one another. To define portions 54 and 56, the frangible lines 50 and 52 each extend from the distal end of end flaps 38 and 42, respectively. Each frangible line 50, 52 extends across fold line 26 onto the respective one of the side panels 20, 22 and then turns back around on the respective side panel to terminate on the distal end of the end flap from which it originated. Therefore, each frangible line 50, 52 is intersected twice by fold line 26.

[0044] Portions of the frangible lines 50, 52 across end flaps 38, 42 and adjacent fold line 26 are preferably arched somewhat inward relative to one another so that the portions 54 and 56 are narrowest at the distal ends of end flaps 38 and 42. Also, each of the portions 54 and 56 on the side panels 20 and 22 preferably are essentially triangular-shaped. When the carton 10 is erected and end flaps 38 and 42 are folded and secured to one another, portions 54 and 56 cooperate with one another along frangible lines 50, 52 to define a first detachable portion 58 as shown in FIG. 25. The frangible lines 50, 52 combine to define a continuous or endless frangible line about the periphery of the first detachable portion 58 of the carton 10.

[0045] FIGS. 26 and 27 illustrate an alternative embodiment of a blank 60 for forming the carton 12 having a first detachable portion 62 (FIG. 27) that is shaped differently than first detachable portion 58 described above. The blank 60 is similar to blank 16, described above, except that frangible lines 64 and 66 across the end flaps 38, 42 and the side panels 20, 22 define portions 68 and 70. Portions 68 and 70 are configured similar to one another and cooperate with one another along frangible lines 64, 66 when the end flaps 38, 42 are folded and secured to each other to define the first detachable portion 62 as shown in FIG. 27. The

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frangible lines 64, 66 combine to define a continuous or endless frangible line about the periphery of the first detachable portion 62 of the carton 12.

[0046] To define portions 68 and 70, the frangible lines 64 and 66 extend from the distal end of end flaps 38 and 42, respectively. Each frangible line 64 and 66 extends across fold line 26 onto the respective one of the side panels 20, 22 and then turns back around on its respective side panel to terminate on the distal end of the respective end flap from which it originated. Therefore, in the alternative embodiment, each frangible line 64, 66 is also intersected twice by fold line 26.

[0047] The portions of frangible lines 64, 66 across end flaps 38, 42 are preferably parallel to one another. Also, each of the portions 68, 70 on the side panels 20, 22 preferably is somewhat square in shape with rounded corners. Each portion 68, 70 also has a truncated portion as a result of the intersection with the fold line 26. However, each portion 68, 70 is oriented on respective side panels 20, 22 such that the curvature of a pair of opposed corners of each portion 68, 70 defined by frangible lines 64, 66 provides upper and lower peaks, relative the top and bottom of the carton 12, respectively. The upper and lower peaks promote natural tearing of the side panels 20, 22, when the endmost article from the upper tier is removed from the carton, without necessarily utilizing additional frangible segments or lines extending upward toward the top panel 24 as described below. Each of the portions 68 and 70 further preferably includes a tab 72 which may be pushed through or pulled out to initiate the removal of the detachable portion 62 from the carton 12 along frangible lines 64, 66.

[0048] FIGs. 28 and 29 illustrate a second alternative embodiment of a blank 74 for forming the carton 14 having a first detachable portion 76 (FIG. 29) that is shaped differently than either first portion 58 or 62 described above. Blank 74 includes frangible lines 78 and 82 across the end flaps 38, 42 of side panels 20, 22 to define portions 84 and 86. Portions 84 and 86 are configured similar to one another. Portions 84 and 86 cooperate with one another along frangible lines 78, 82 when the end flaps 38, 42 are folded and secured to each other to define the first detachable portion 76 as shown in Fig. 9. The frangible lines 78, 82 combine to define a continuous or endless frangible line about the periphery of the first detachable portion 76 of the carton 14.

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[0049] To define portions 84 and 86, the frangible lines 78 and 82 extend from the distal end of end flaps 38 and 42, respectively. Each frangible line 78 and 82 extends across fold line 26 onto the respective one of the side panels 20, 22 and then turns back around on its respective side panel to terminate on the distal end of the respective end flap from which it originated. Therefore, each frangible line 78, 82 is intersected twice by fold line 26.

[0050] As best shown in FIG. 28, segments 78a and 82a of frangible lines 78 and 82, extend inward on side panels 20, 22 from the fold line 26 toward the fold lines 30 and 36, respectively, so that the distance between the segments 78a and 82a of the frangible lines 78, 82 and the fold lines 30, 36 narrows as the distance from the fold line 26 increases. Also, segments 78b and 82b of the frangible lines 78 and 82, extending inward from the fold line 26 and adjacent the fold lines 32 and 34, are arched somewhat away from the fold lines 32 and 34. However, the portions of the segments 78b and 82b approximately furthest from the fold line 26 turn back toward the fold lines 32 and 34 to define an upper peak in close proximity to the top panel 24 to facilitate natural tearing of the side panels 20 and 22 when the endmost article from the upper tier is removed from the carton, without necessarily utilizing additional frangible segments or lines extending upward toward the top panel 24.

[0051] Partial or complete removal of first displaceable portions 58, 62 and 74 from the cartons 10, 12 and 14 defines an opening for dispensing articles. For example, as shown in FIG. 30, the endmost article of the upper or lower row of articles may be removed through the opening defined by removal of first detachable portion 58. The article is prevented from accidentally rolling out of the carton 10 through the opening by the upper edge 88 and lower edge 90. The lower edge 90 is formed by remaining portions of end flaps 38 and 42 after the removal of first displaceable portion 58. The opening is also defined by upper edge 88 which restrains the upper row of articles within the carton as shown in FIG. 30. The upper edge 88 is also formed by remaining portions of end flaps 38 and 42 after removal of first displaceable portion 58.

[0052] Each carton 10 and 12 also includes a frangible line 92 extending between each side panel 20, 22 across top panel 24. However, cartons 10 and 12 of the present invention may instead be formed without the frangible line 92 as is carton 14 shown in FIG. 29. Also, carton 14 may instead be formed with frangible line 92 as are cartons 10 and 12.

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[0053] When including the frangible line 92, the frangible line 92 on top panel 24 is displaced from the exit end of the cartons 10, 12. The frangible line 92 terminates at the first detachable portion 58 or 62 on side panels 20, 22 to partially define a second detachable portion 94 which borders above first detachable portion 58 or 62. The second detachable portion 94 therefore includes the upper edge 88 as shown in FIG. 30 for retaining the endmost article in the upper row of the carton.

[0054] However, the segments 92a, 92b of the frangible line 92 on side panels 20, 22, as best shown in FIG. 24, are preferably extensively more weakened than the remainder of the frangible line 92 on top panel 24 to allow easier separation of the second detachable portion 94 from the side panels 20, 22. The second detachable portion 94 may therefore be at least partially detached from the carton with the remainder of the frangible line 92 remaining uncut across the top panel 24 to create a hinge. The second detachable portion 94 may be pivoted upward as shown in FIG. 31 to enlarge the opening to facilitate removal of the endmost article in the upper row from the carton. However, the second detachable portion 94, when pivoted back to the initial position, can yet restrain the remaining articles in the upper row. Alternatively, as shown in FIG. 32, the second detachable portion 94 may also be completely removed from the carton to enlarge the opening for dispensing articles. In either case, the opening for dispensing articles would then be defined between lower edge 90 and the upper edge 88 (FIG. 32) now across the top panel 24 after separation along frangible line 92. The opening defined by detaching the first detachable portion 58 or 62 and the second detachable portion 94 is configured to permit the endmost articles from both the upper and lower rows to be removed substantially simultaneously from the end of the carton.

[0055] The present invention has been illustrated in relation to a particular embodiment that is intended in all respects to be illustrative rather than restrictive. Those skilled in the art will recognize that the present invention is capable of many modifications and variations without departing from the scope of the invention. Accordingly, the scope of the present invention is described by the claims appended hereto and supported by the foregoing.

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CLAIMS

1. A carton for carrying articles, said carton comprising:
a plurality of panels that cooperate to form the walls of said carton;
5 at least one detachable portion detachably connected to at least a first and a second adjacent wall of said carton, said at least one detachable portion to be detached from said carton to define an opening for exposing at least one endmost article for removal from said carton; and
a retention means for retaining one or more articles in said carton after said at least
10 one detachable portion has been detached from said carton, comprising:
a yieldable portion for restraining one end of said one or more articles, said yieldable portion being partially detachable from said carton; and
a rigid portion for restraining an opposite end of said one or more articles;
wherein said yieldable portion and said rigid portion are each adjacent to said at least
15 one detachable portion.
2. The carton of Claim 1, wherein said at least one detachable portion is defined by at least one frangible line integral to at least said first and second wall of said carton.
- 20 3. The carton of Claim 1, wherein said yieldable portion is hingedly connected to said carton by a fold line.
4. The carton of Claim 3, further comprising at least one separation means for partially detaching said yieldable portion, such that said yieldable portion can pivot about
25 said fold line.
5. The carton of Claim 4, wherein said at least one separation means originates from said frangible line and terminates at an end of said fold line.
- 30 6. The carton of Claim 4, wherein said separation means originates from said frangible line and terminates substantially near an end of said fold line.

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7. The carton of Claim 4, wherein upon partially detaching said yieldable portion, said yieldable portion can be pivoted so as to variably enlarge said opening in order to facilitate removal of said at least one endmost article from said carton.

5 8. The carton of Claim 4, wherein upon partially detaching said partially detachable portion, said partially detachable portion can be pivoted so as to reversibly enlarge said opening in order to facilitate removal of said at least one endmost article from said carton.

10 9. The carton of Claim 4, wherein said separation means is a frangible line.

10. The carton of Claim 4, wherein said separation means is a tear tape.

11. The carton of Claim 3, wherein said fold line is integral to a wall adjacent to
15 said first and second walls of said carton.

12. A carton for carrying articles, said carton comprising:
a plurality of walls, comprising:

a top wall; and

20 an end wall adjacent to said top wall, said end wall comprising end flaps and end wall panels of said carton;

a detachable portion detachably connected to said top and said end walls, said detachable portion being defined by a frangible line integral to said top and end wall, said detachable portion to be detached from said carton to define an opening for exposing at least
25 one endmost article for removal from said carton; and

a retention means for restraining one or more articles in said carton after said at least one detachable portion has been detached from said carton, comprising:

30 a yieldable portion for restraining an end of said one or more articles, wherein upon partially detaching said at least one partially detachable portion, said at least one yieldable portion is hingedly connected to said carton via a fold line so as to variably and reversibly enlarge said opening to facilitate removal of said at least one endmost article from said carton; and

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a rigid portion for restraining an opposite end of said one or more articles;
wherein said yieldable portion and said rigid portion are each adjacent to said at least one detachable portion along at least a portion of said frangible line.

5 13. The carton of Claim 12, further comprising a separation means for partially detaching said yieldable portion, said at least one separation means originating from said frangible line and terminating at an end of said fold line.

 14. The carton of Claim 12, wherein said yieldable portion is detachably
10 connected to said top wall and hingedly connected to a side wall that is adjacent to said end panel and to said top wall.

 15. The carton of Claim 13, wherein said yieldable portion is further detachably connected to said end wall.

15

 16. A carton formed from a single blank, said blank comprising:
a top panel;
a side panel connected along a fold line to each opposing edge of said top panel;
a bottom panel connected along a fold line to one of said side panels at an edge
20 thereof opposite said top panel;
a plurality of end flaps each connected along a fold line to said top panel, said bottom panel, and to each of said side panels to form an end closure structure for at least partially closing an end of said carton when said carton is erected;
a detachable portion defined by a frangible line and formed at least in part from said
25 top panel and said end flaps, said detachable portion to be detached from said carton to define an opening for dispensing articles from said carton when said carton is erected; and
a retention means for retaining one or more articles in said carton after said at least one detachable portion has been detached from said carton, comprising:
a yieldable portion restraining one end of said one or more articles, said
30 yieldable portion being defined in part by said frangible line, wherein upon partially detaching said yieldable portion, said yieldable portion is hingedly connected to said carton via a fold line extending across at least a portion of one of said side panels so

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as to variably and reversibly enlarge said opening to facilitate removal of said at least one endmost article from said carton; and

a rigid portion for restraining an opposite end of said one or more articles, said rigid portion being defined in part by said frangible line.

5

17. The carton of Claim 16, wherein said yieldable portion is further defined in part by a separation means extending from said frangible line to said fold line extending across at least a portion of one of said side panels, said separation means being for partially detaching said yieldable portion.

10

18. A package, comprising:

an article group formed of at least one row of cylindrical articles, said at least one row including a plurality of said articles disposed on sides thereof in a side-by-side parallel fashion; and

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a carton disposed around said group, said carton comprising:

top and bottom opposed walls interconnected by a pair of opposed side walls to form a tubular structure, wherein each of said side walls is disposed alongside adjacent ends of said articles of said group;

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an end closure structure at least partially closing each end of said tubular structure, wherein each of said end closure structures is disposed alongside a side wall of a respective endmost article of said at least one row; and

an article dispenser for dispensing an endmost article of said at least one row from said carton, wherein said article dispenser comprises:

25

a detachable portion formed at least in part from said top wall and from one of said end closure structures, said detachable portion being detachably connected to said top panel and said one end closure structure by a frangible line, and said detachable portion is to be detached from said carton to define an opening for exposing said respective endmost article for removal; and

30 one detachable portion has been detached from said carton, comprising:

a yieldable portion for restraining one end of said one or more articles, said yieldable portion being formed at least in part from said respective end closure

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structures and from one of said side panels, wherein upon partially detaching said yieldable portion, said yieldable portion is hingedly connected to said carton via a fold line extending across at least a portion of one of said side panels so as to variably and reversibly enlarge said opening to facilitate removal of said at least one endmost article from said carton; and

a rigid portion for restraining an opposite end of said one or more articles, said rigid portion being defined in part by said frangible line

19. A method for dispensing at least one endmost article in an article group enclosed by a carton, comprising:

detaching a detachable portion of said carton to define an opening for exposing said at least one endmost article for removal from said carton, and to define a rigid portion for restraining an end of said endmost article and a yieldable portion for restraining an opposite end of said endmost article, said detachable portion being detachably connected to at least a first and a second adjacent wall of said carton;

after said at least one detachable portion has been detached from said carton, partially detaching said yieldable portion so as said yieldable portion is hingedly connected to a third wall of said carton by a fold line; and

causing said yieldable portion to yield along said fold line so as to variably enlarge said opening in order to facilitate removal of said at least one endmost article from said carton.

20. The method of Claim 19, further comprising causing said yieldable portion to yield along said fold line so as to variably reduce said opening in order to facilitate restraining articles in said carton after said at least one detachably portion has been detached from said carton.

21. A carton for encasing and dispensing articles, comprising:
a first wall, a second wall, and an end structure cooperatively attached to each of said walls;

a first detachable portion integral to at least a section of one of said walls;

a second detachable portion integral to at least a section of said end structure;

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a first severance line defining at least a segment of the perimeter of said first detachable portion; and

a second severance line defining at least a segment of the perimeter of said second detachable portion;

5 wherein a segment of each of said severance lines is common to each of said detachable portions.

22. The carton of claim 21, wherein said first detachable portion is a tear strip that defines a gap, said gap being sufficiently wide to enable a user to insert one or more fingers
10 to grip said second detachable portion.

23. The carton of claim 22, wherein said tear strip comprises a means for grasping.

24. The carton of claim 21, wherein said second detachable portion is a tear panel that
15 defines an opening for dispensing articles.

25. The carton of claim 24, wherein said tear panel comprises a portion of said end structure.

20 26. The carton of claim 21, wherein said end structure is an end closure structure that restrains the undesirable exit of articles.

27. The carton of claim 26, wherein said end closure structure comprises an end panel foldably attached to a third wall adjacent to each of said first and second walls.

25

28. A blank for forming a carton, comprising:

a first side panel, having a first end panel, foldably connected to a top panel along a first edge;

a second side panel, having a second end panel, foldably connected to said top panel
30 along a second edge;

a first end panel frangible line extending across said first end panel and terminating at said first side panel;

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a first side panel frangible line extending from said first end panel to said top panel;
a first top panel frangible line extending from said first side panel to said second side
panel;

5 a second side panel frangible line extending from said top panel to said end second
end panel;

a second end panel frangible line extending across said second end panel and
terminating at said second side panel; and

a second top panel frangible line extending across both of said edges.

10 29. The blank of claim 28, wherein said frangible lines cooperatively define adjacent
detachable portions.

30. The blank of claim 29, wherein said first and second top panel frangible lines
cooperatively define at least a section of a detachable tear strip.

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31. The blank of claim 30, wherein said end panels, side panels, and second top panel
frangible lines cooperatively define a detachable tear panel.

20 32. The blank of claim 29, further comprising a bottom panel, having a bottom end
panel, foldably connected to one of said side panels.

33. The blank of claim 32, wherein said end panels are configured to connectably
form an end structure adjacent to one of said detachable portions.

25 34. A method for preventing the undesired exit of articles from a container,
comprising the steps of:

providing a container including a first and a second detachable portion integral to the
exterior of said container;

30 separating at least a section of said first detachable portion from said container to
expose an edge of said second detachable portion;

applying pressure to said edge to initiate the separation of at least a section of said
second detachable portion from said container;

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separating a least a section of said second detachable portion from said container;
creating an opening for access, integral to the exterior of said container, formed by the
separation of said detachable second portion; and
blocking the undesired exit of articles through said opening with at least a portion of
5 an end structure adjacent to said detachable second portion.

35. The method of claim 34, wherein said step of providing further comprises
providing a container with a bottom end panel, a top end panel, and a plurality of side end
panels all connected to form an end structure.

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36. The method of claim 35, wherein said step of separating said first detachable
portion further comprises forming a gap of sufficient width for a user to grasp said edge.

37. The method of claim 36 further comprising the step of grasping and pulling said
15 edge of said second detachable portion.

38. The method of claim 37, wherein said step of separating said second detachable
portion further comprises detaching at least a portion of said end structure.

20 39. A carton for carrying articles, said carton comprising:
a plurality of panels;

at least one fully detachable portion detachably connected to at least a first and a
second adjacent panel of said carton, said at least one fully detachable portion to be detached
from said carton to define an opening for exposing at least one endmost article for removal
25 from said carton; and

at least one partially detachable portion for restraining articles in said carton after said
at least one fully detachable portion has been detached from said carton;

wherein said at least one fully detachable portion and said at least one partially
detachable portion border one another.

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40. The carton of Claim 39, wherein said at least one fully detachable portion is defined by at least one frangible line integral to at least said first and second panel of said carton.

5 41. The carton of Claim 40, further comprising at least one separation means for partially detaching said partially detachable portion, such that said partially detachable portion is hingedly connected to said carton.

42. The carton of Claim 41, wherein said partially detachable portion is hingedly
10 connected to said carton by a fold line.

43. The carton of Claim 41, wherein said at least one separation means originates from said frangible line and terminates at an end of one of said fold lines.

15 44. The carton of Claim 41, wherein said at least one separation means originates from said frangible line and terminates substantially near an end of one of said fold line.

45. The carton of Claim 41, wherein upon partially detaching said partially detachable portion, said partially detachable portion is yieldable so as to variably enlarge said
20 opening in order to facilitate removal of said at least one endmost article from said carton.

46. The carton of Claim 41, wherein upon partially detaching said partially detachable portion, said partially detachable portion is yieldable so as to reversibly enlarge said opening in order to facilitate removal of said at least one endmost article from said
25 carton.

47. The carton of Claim 41, wherein said separation means is a frangible line.

48. The carton of Claim 41, wherein said separation means is a tear tape.
30

49. The carton of Claim 42, wherein said fold line is integral to a panel adjacent to said first and second panel of said carton.

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50. A carton for carrying articles, said carton comprising:

a plurality of panels, comprising:

a top panel, and

5 an end panel adjacent to said top panel, said end panel comprising end flaps of said carton;

a fully detachable portion detachably connected to said top and said end panel, said fully detachable portion being defined by a frangible line integral to said top and end panel, said fully detachable portion to be detached from said carton to define an opening for
10 exposing at least one endmost article for removal from said carton; and

at least one partially detachable portion for restraining articles in said carton after said at least one fully detachable portion has been detached from said carton, wherein upon partially detaching said at least one partially detachable portion, said at least one partially detachable portion is hingedly connected to said carton via a fold line so as to variably and
15 reversibly enlarge said opening to facilitate removal of said at least one endmost article from said carton;

wherein said fully detachable portion and each of said at least one partially detachable portion border one another along at least a portion of said frangible line.

20 51. The carton of Claim 50, further comprising at least one separation means for partially detaching each partially detachable portion, said at least one separation means originating from said frangible line and terminating at an end of said fold line.

25 52. The carton of Claim 50, wherein said at least one partially detachable portion is detachably connected to said top panel and hingedly connected to a side panel that is adjacent to said end panel and to said top panel.

53. The carton of Claim 51, wherein said at least one partially detachable portion is further detachably connected to said end panel.

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54. A carton formed from a single blank, said blank comprising:
a top panel;

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a side panel connected along a fold line to each opposing edge of said top panel;
a bottom panel connected along a fold line to one of said side panels at an edge thereof opposite said top panel;

5 a plurality of end flaps each connected along a fold line to said top panel, said bottom panel, and to each of said side panels to form an end closure structure for at least partially closing an end of said carton when said carton is erected;

a fully detachable portion defined by a frangible line and formed at least in part from said top panel and said end flaps, said fully detachable portion to be detached from said carton to define an opening for dispensing articles from said carton when said carton is
10 erected; and

at least one partially detachable portion defined in part by said frangible line, wherein upon partially detaching said at least one partially detachable portion, said at least one partially detachable portion is hingedly connected to said carton via a fold line extending across at least a portion of one of said side panels so as to variably and reversibly enlarge said
15 opening to facilitate removal of said at least one endmost article from said carton.

55. The carton of Claim 54, wherein said at least one partially detachable portion is further defined in part by a separation means extending from said frangible line to said fold line extending across at least a portion of one of said side panels, said separation means being
20 for partially detaching said at least one partially detachable portion.

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56. A package, comprising:

an article group formed of at least one tier of cylindrical articles, said at least one tier including a plurality of said articles disposed on sides thereof in a side-by-side parallel fashion; and

5 a carton disposed around said group, said carton comprising:

top and bottom opposed panels interconnected by a pair of opposed side panels to form a tubular structure, wherein each of said side panels is disposed alongside adjacent ends of said articles of said group;

10 an end closure structure at least partially closing each end of said tubular structure, wherein each of said end closure structures is disposed alongside a side wall of a respective endmost article of said at least one tier; and

an article dispenser for dispensing an endmost article of said at least one tier from said carton, wherein said article dispenser comprises:

15 a fully detachable portion formed at least in part from said top panel and from one of said end closure structures, said fully detachable portion being detachably connected to said top panel and said one end closure structure by a frangible line to be detached from said carton to define an opening for exposing said respective endmost article for removal; and

20 at least one partially detachable portion formed at least in part from said respective end closure structures and from one of said side panels, said at least one partially detachable portion for restraining articles in said carton after said at least one fully detachable portion has been detached from said carton, wherein upon partially detaching said at least one partially detachable portion, said at least one partially detachable portion is hingedly connected to said
25 carton via a fold line so as to variably and reversibly enlarge said opening to facilitate removal of said at least one endmost article from said carton.

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57. A method for dispensing at least one endmost article in an article group enclosed by a carton, comprising:

detaching a fully detachable portion of said carton to define an opening for exposing said at least one endmost article for removal from said carton, said fully detachable portion
5 being detachably connected to at least a first and a second adjacent panel of said carton;

after said at least one fully detachable portion has been detached from said carton, partially detaching at least one partially detachable portion so as said at least one partially detachable portion is hingedly connected to a third panel of said carton by a fold line; and

causing said at least one partially detachable portion to yield along said fold line so as
10 to variably enlarge said opening in order to facilitate removal of said at least one endmost article from said carton.

58. The method of Claim 57, further comprising causing said at least one partially detachable portion to yield along said fold line so as to variably reduce said opening in order
15 to facilitate restraining articles in said carton after said at least one fully detachable portion has been detached from said carton.

59. A carton for enclosing a group of cylindrical articles arranged in a plurality of columns and at least one row, comprising:

20 a plurality of walls hingedly connected to one another; and

at least one detachable portion detachably connected to at least a first and a second adjacent wall, said at least one detachable portion to be detached from said carton to define an opening for exposing at least a portion of at least one article in a column that is adjacent to an endmost column of said article group.

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60. The carton of Claim 59, further comprising:

at least one partially detachable portion for restraining articles in said carton after said at least one detachable portion has been detached from said carton;

wherein said at least one fully detachable portion and said at least one partially
30 detachable portion border one another.

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61. The carton of Claim 59, wherein said article in said column that is adjacent to said endmost column is in the uppermost row of the group of articles.

5 62. The carton of Claim 59, wherein said article in said column that is adjacent to said endmost column is in the lowermost row of the group of articles.

63. The carton of Claim 59, wherein said article in said column that is adjacent to said endmost column is in a row that is between the uppermost and lowermost rows of the group of articles.

10

64. The carton of Claim 59, wherein said detachable portion is defined by a frangible line.

15 65. The carton of Claim 60, wherein said partially detachable portion is defined at least in part by a frangible line.

66. The carton of Claim 65, wherein said partially detachable portion is defined in part by a fold line.

20 67. The carton of Claim 59, wherein said opening exposes at least a portion of an end of said at least one article in a column that is adjacent to an endmost column of said article group.

25 68. The carton of Claim 67, wherein said portion of said end is sufficient to enable removal of said at least one article in a column that is adjacent to an endmost column of said article group.

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69. A package, comprising:

an article group formed of at least one column and at least one row of cylindrical articles, said at least one row including a plurality of said articles disposed on sides thereof in a side-by-side parallel fashion; and

5 a carton disposed around said group, said carton comprising:

top and bottom opposed walls interconnected by a pair of opposed side walls to form a tubular structure, wherein each of said side walls is disposed alongside adjacent ends of said articles of said group;

an end closure structure at least partially closing each end of said tubular structure,
10 wherein each of said end closure structures is disposed alongside the sides of articles in an endmost column of said article group; and

an article dispenser for dispensing articles in said article group, wherein said article dispenser comprises:

a fully detachable portion formed at least in part from said top wall and from one of
15 said end closure structures, said fully detachable portion being detachably connected to said top panel and said one end closure structure by a frangible line to be detached from said carton to define an opening for exposing said respective endmost article for removal and for exposing at least a portion of an end of an article in the column adjacent to said endmost column; and

20 at least one partially detachable portion formed at least in part from said respective end closure structures and from one of said side walls, said at least one partially detachable portion for restraining articles in said carton after said at least one fully detachably portion has been detached from said carton, wherein upon partially detaching said at least one partially detachable portion, said at least one partially detachable portion is hingedly
25 connected to said carton via a fold line so as to variably and reversibly enlarge said opening to facilitate removal of said articles from said carton.

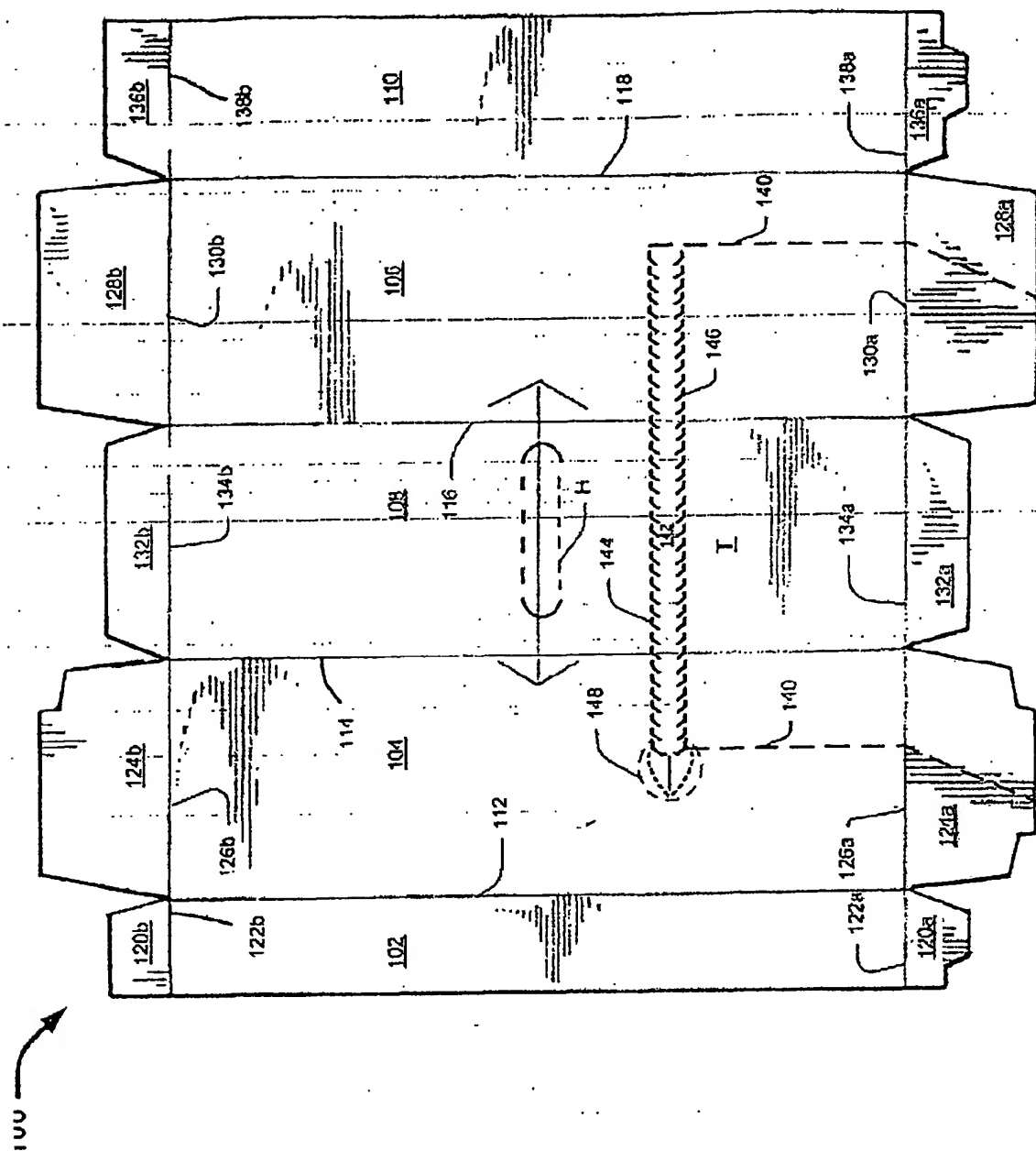
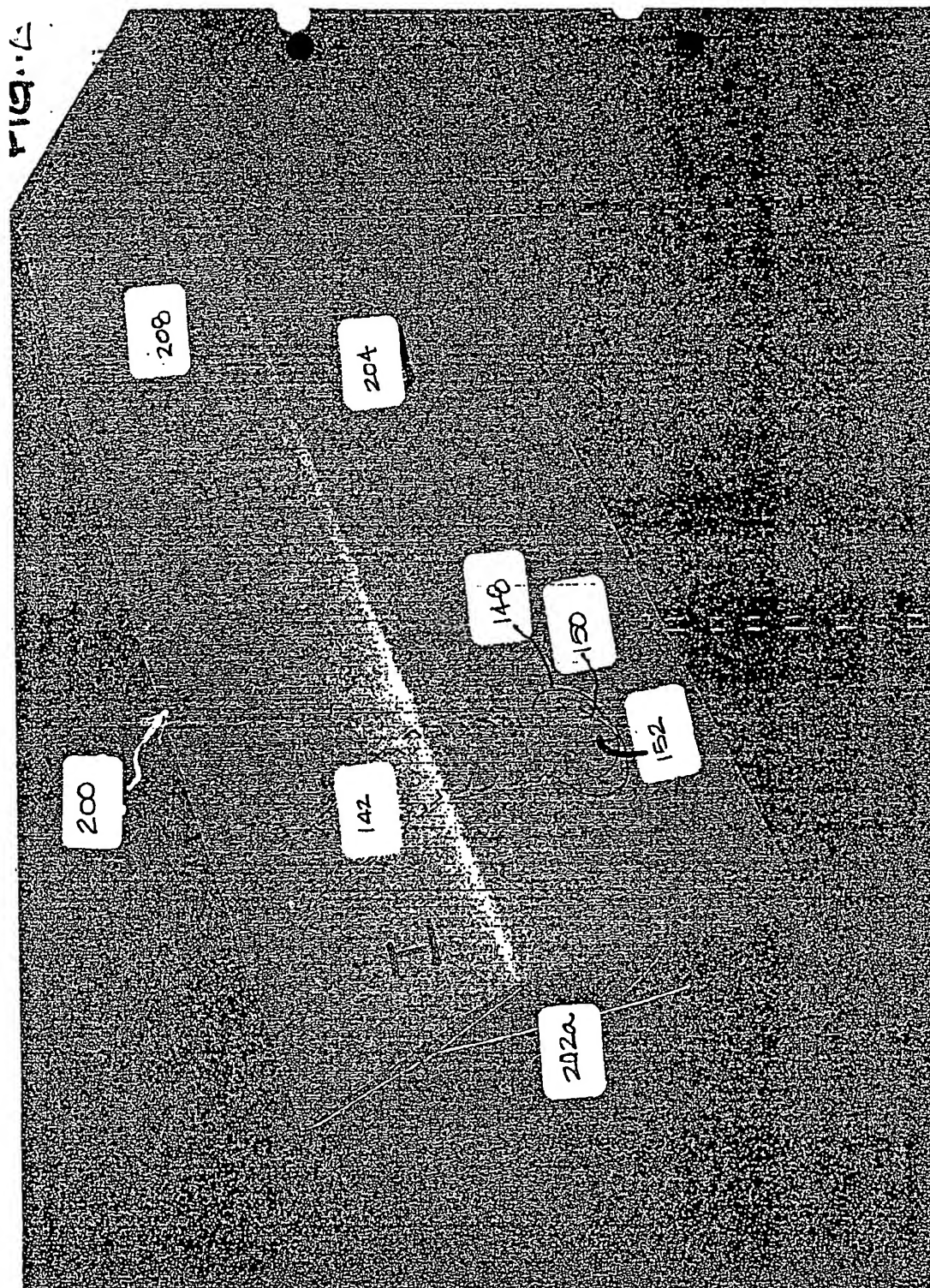


FIG. 1



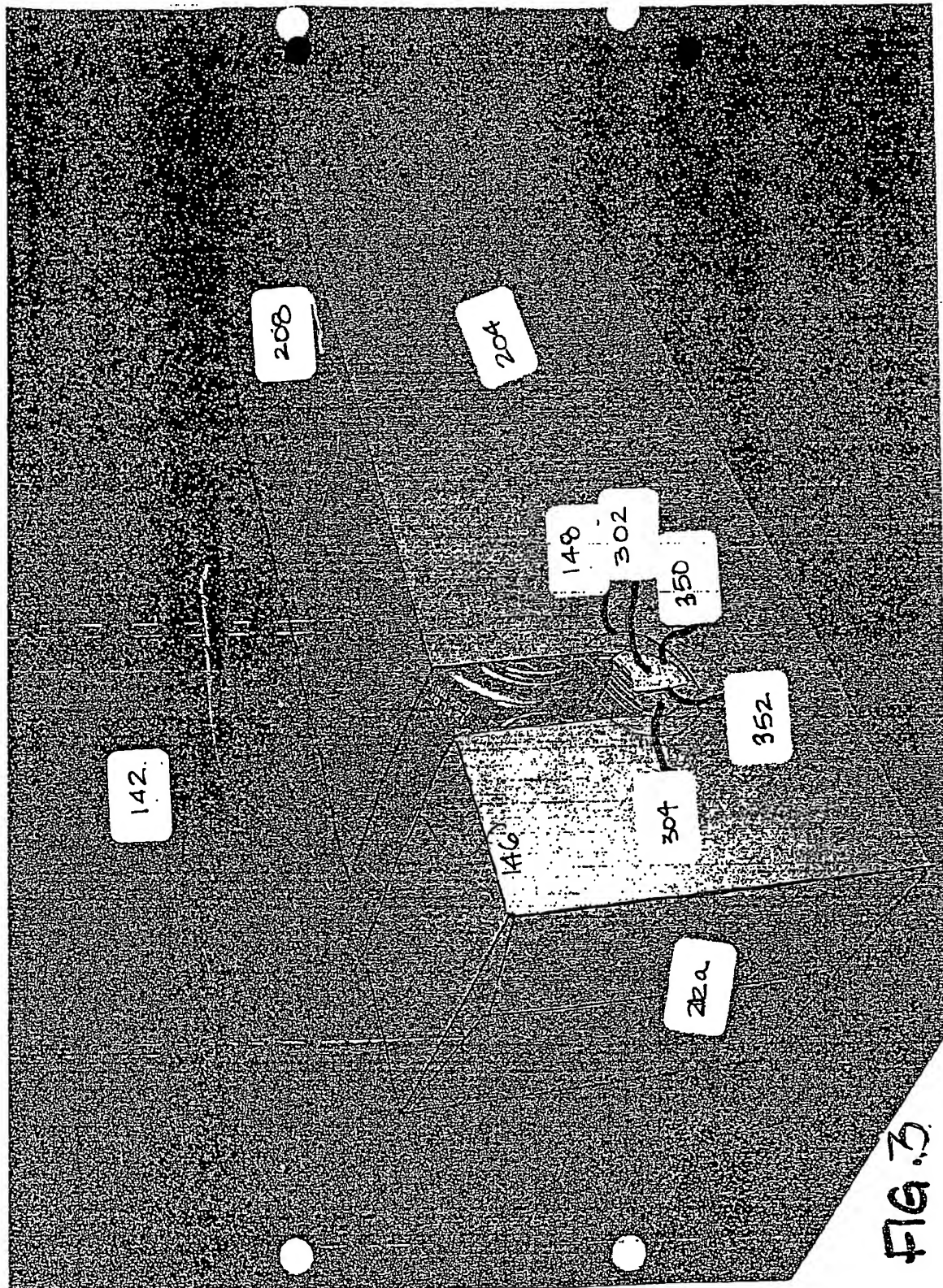
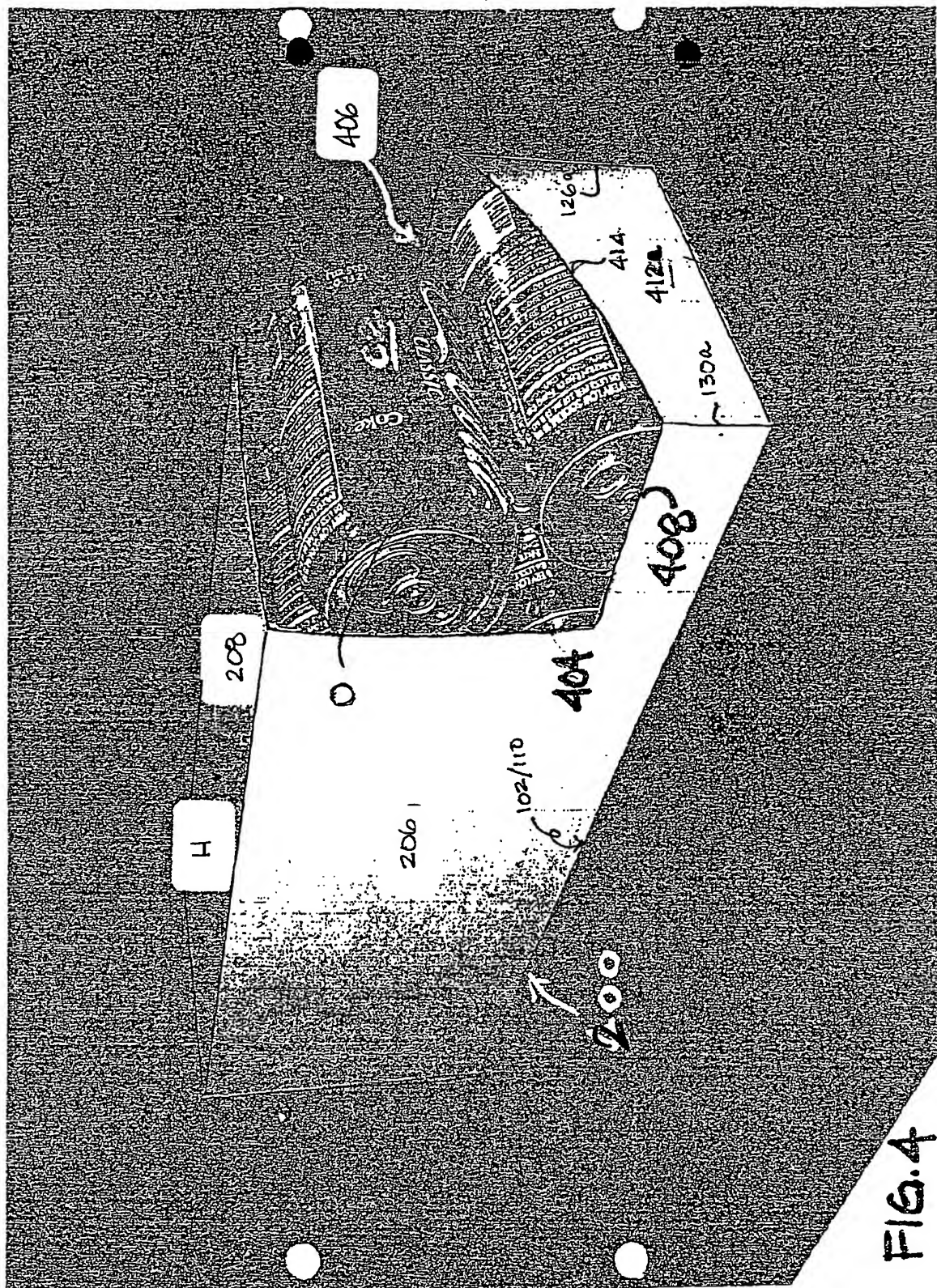


FIG. 3



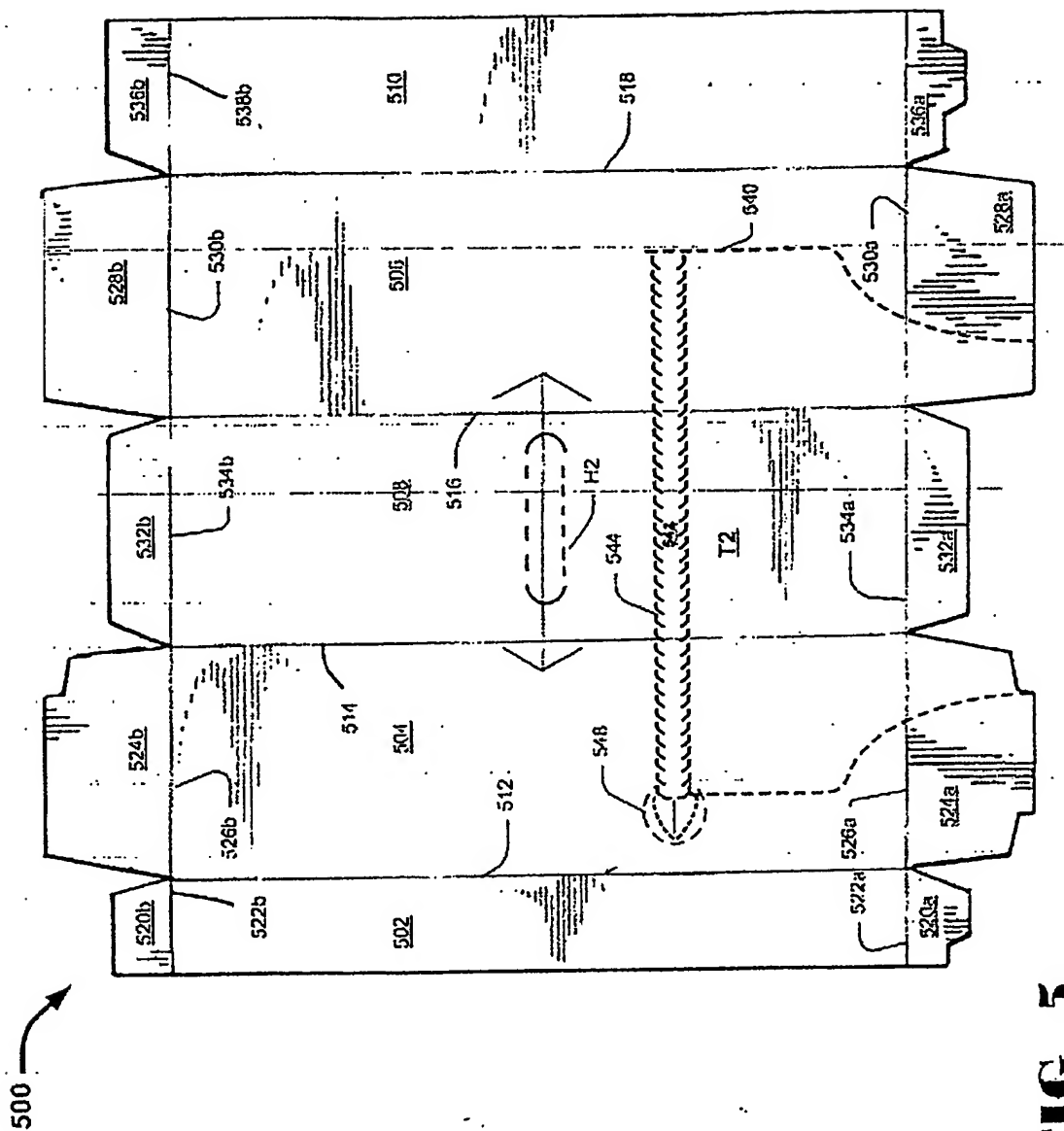


Fig. 5

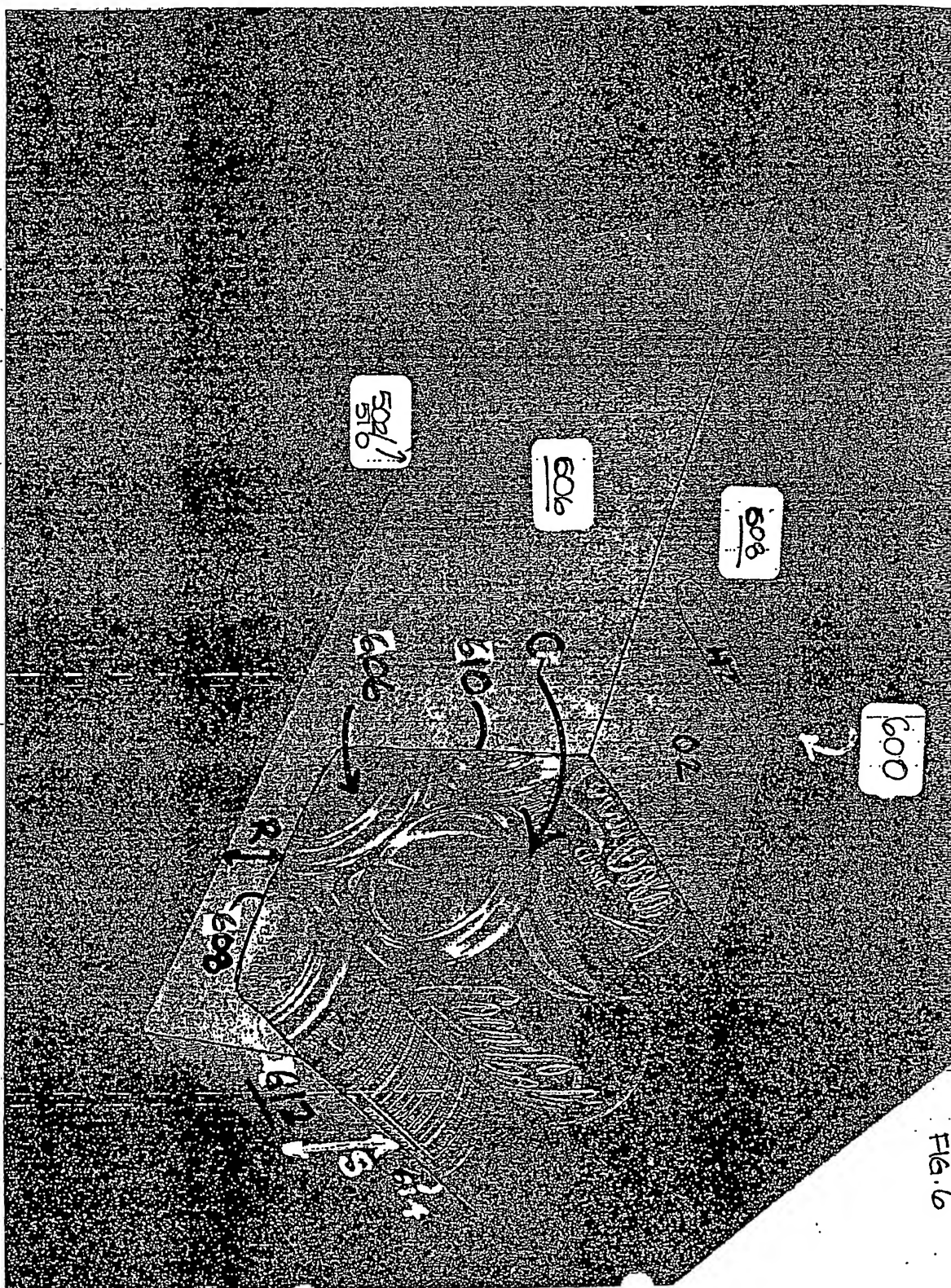
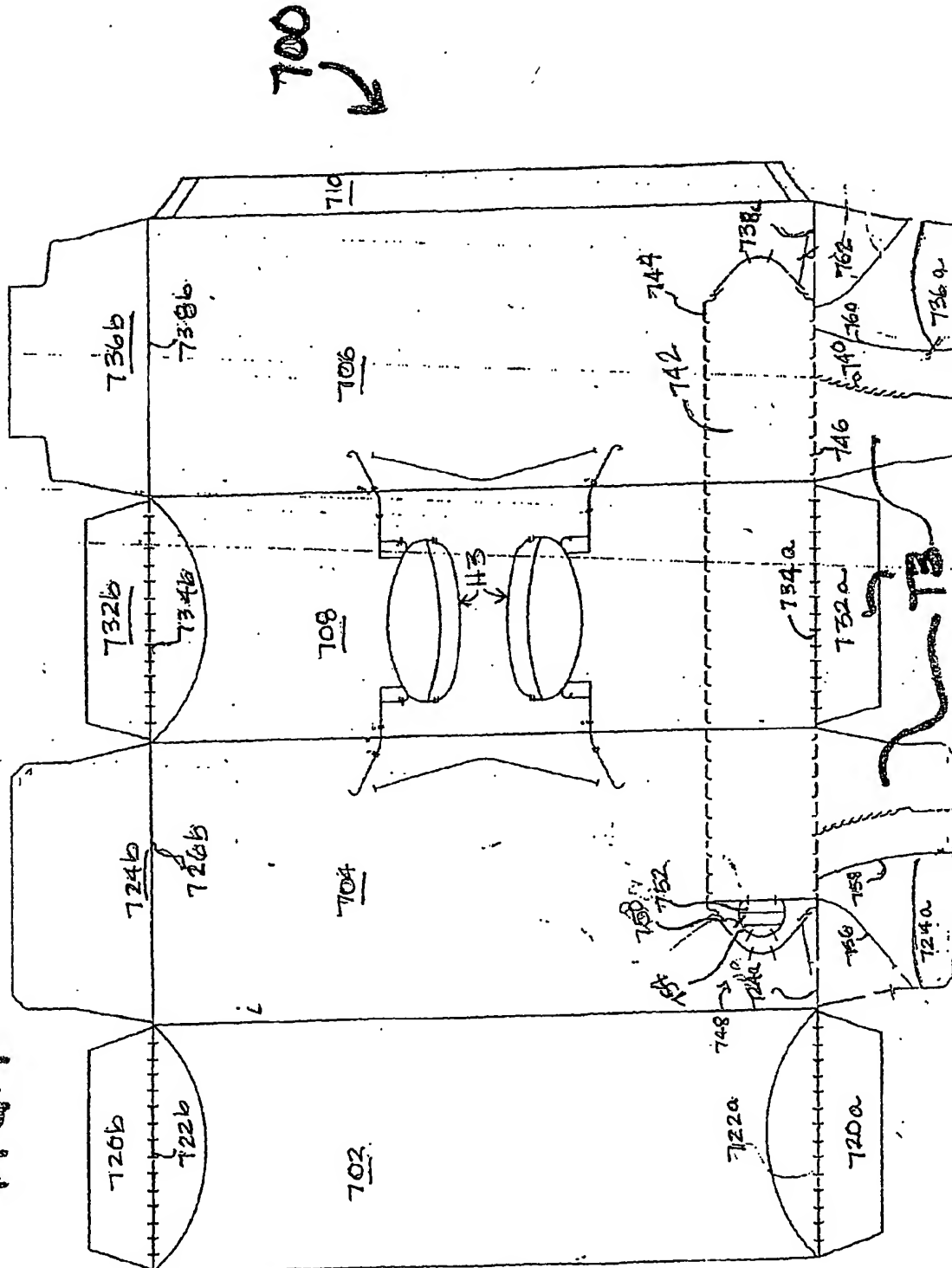
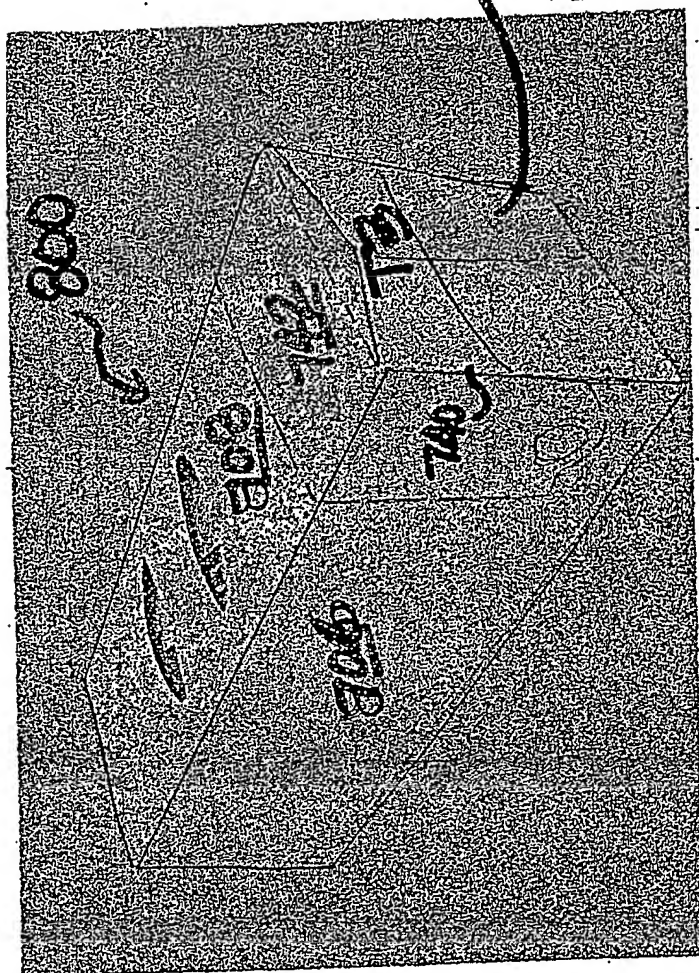


FIG. 7





800a

FIG. 8

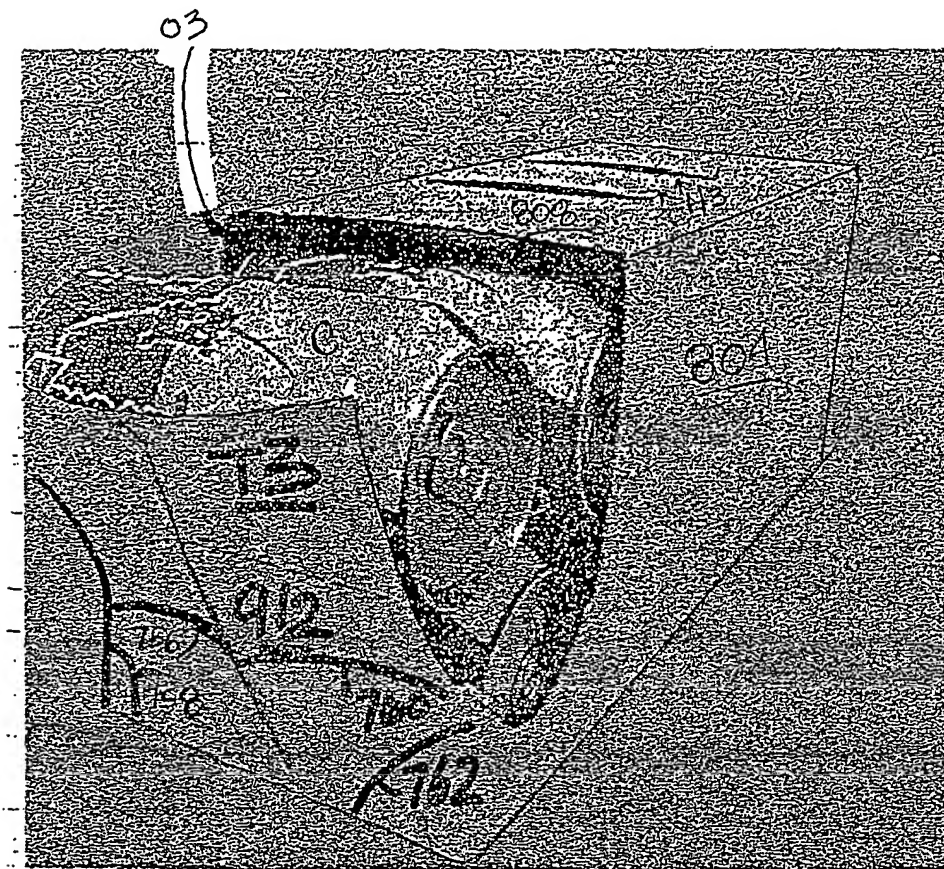
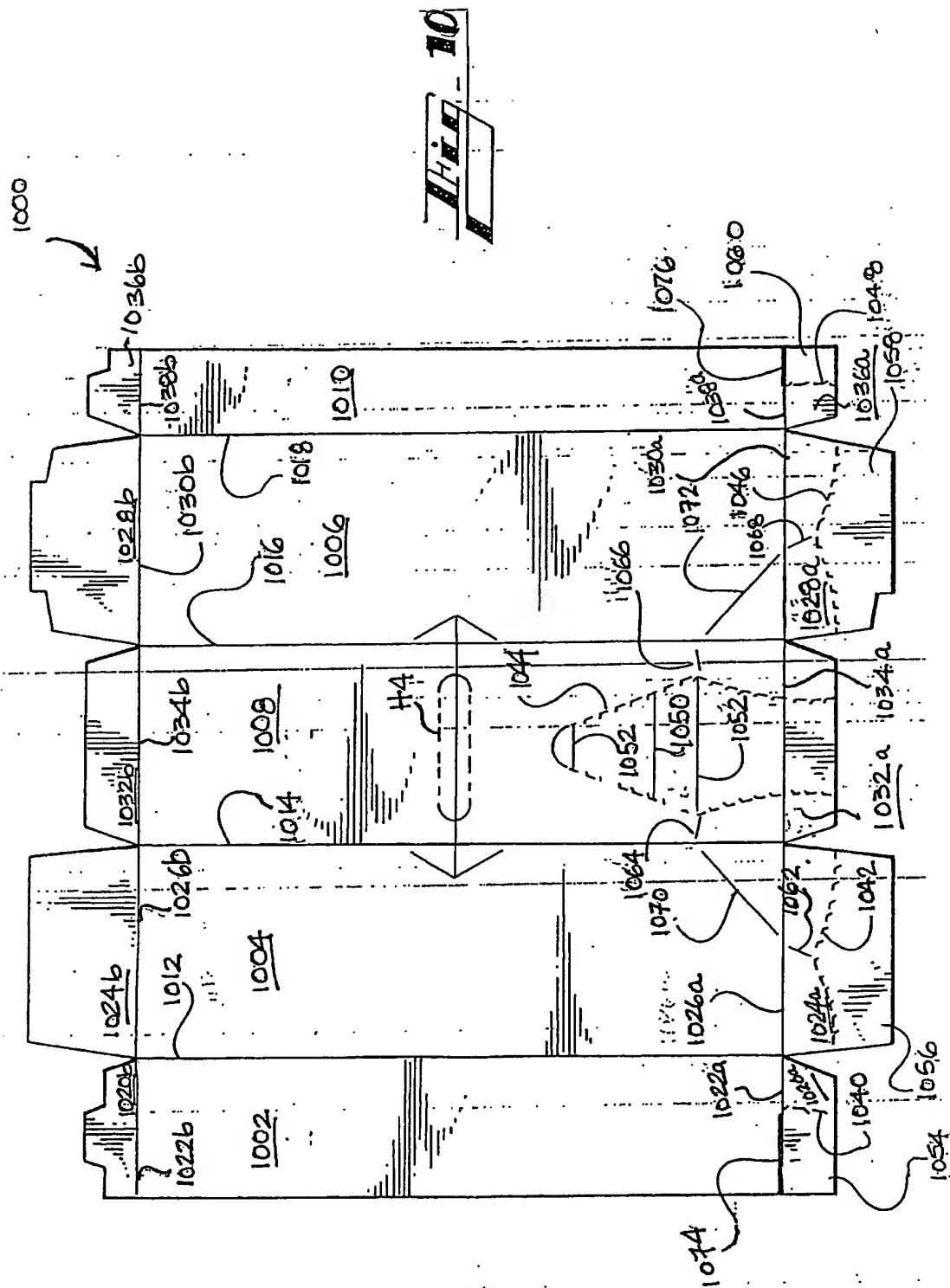


FIG. 9



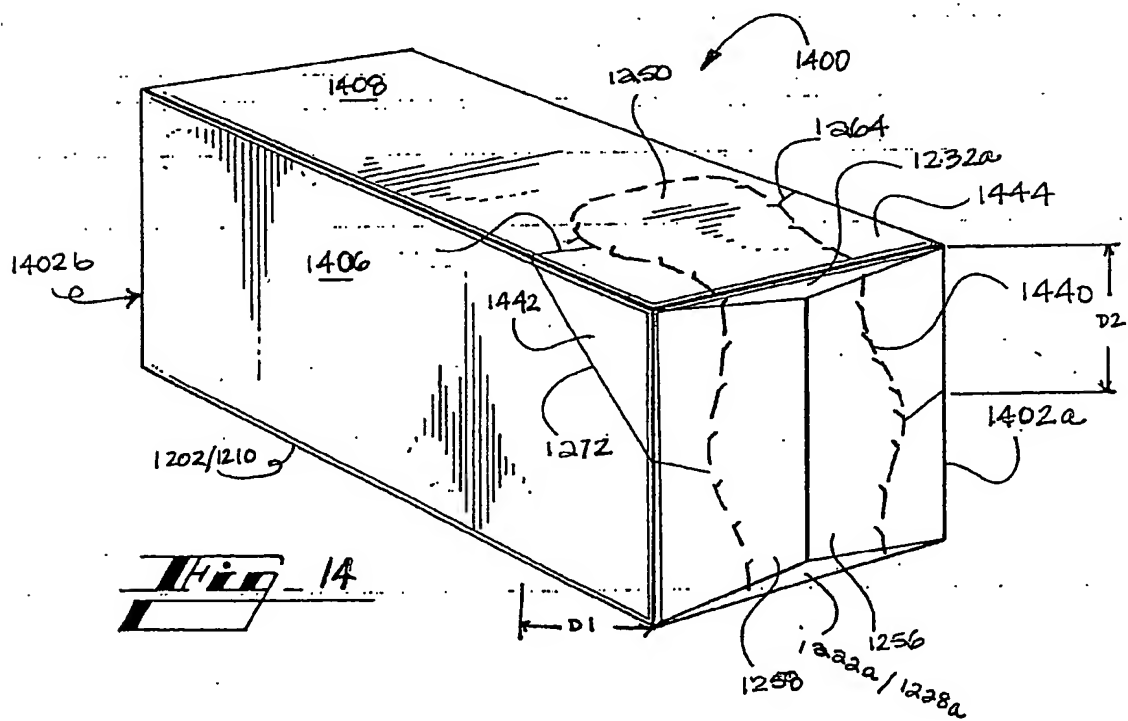
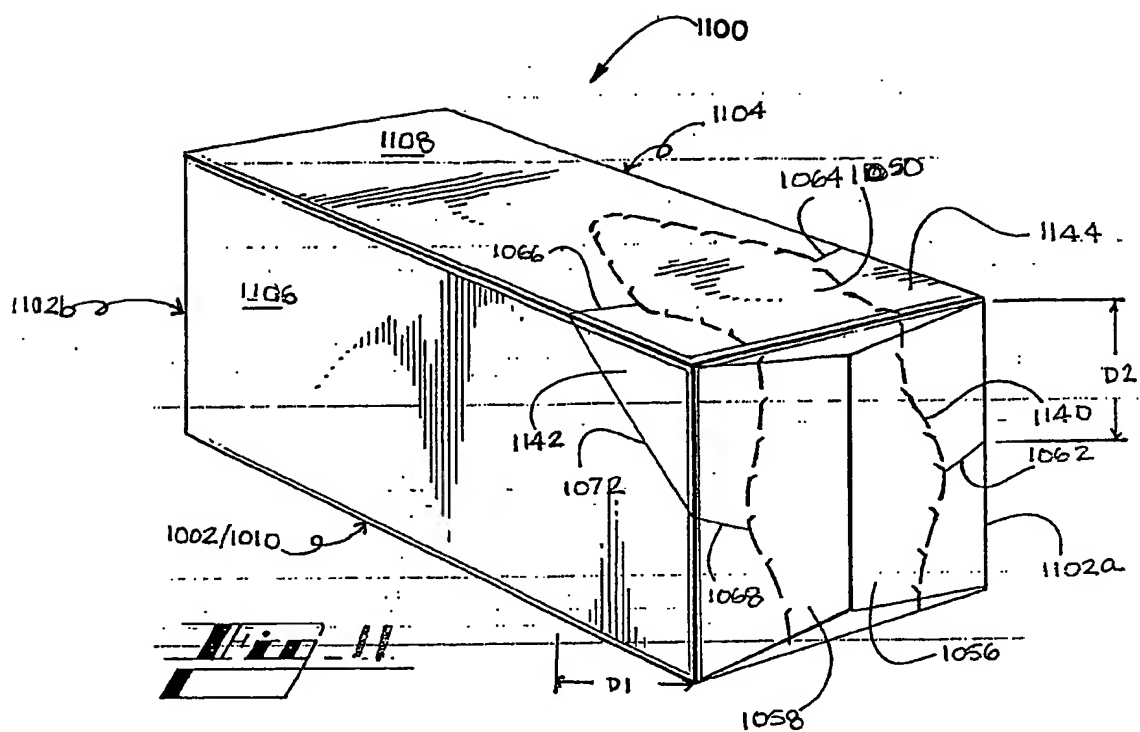
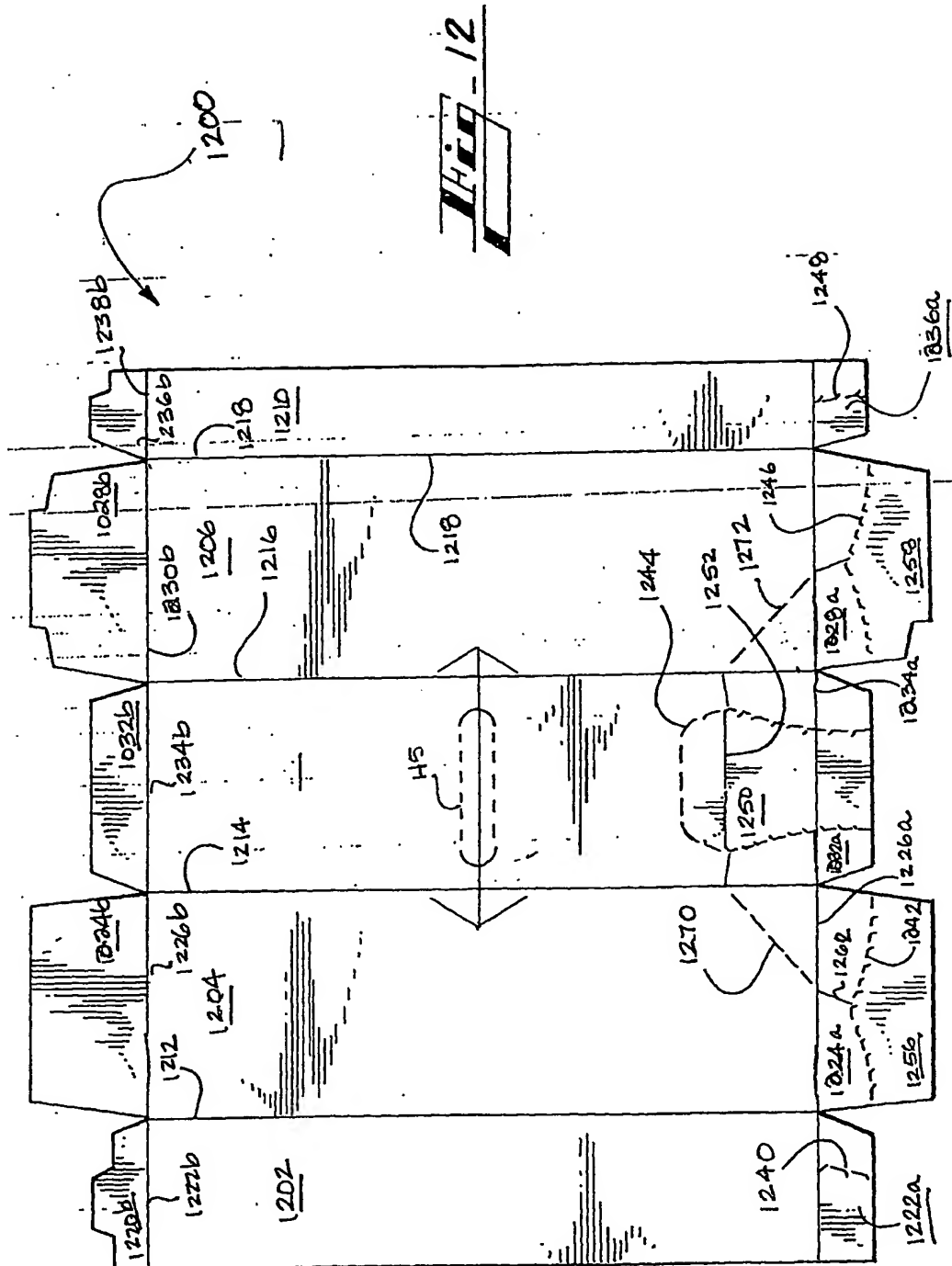
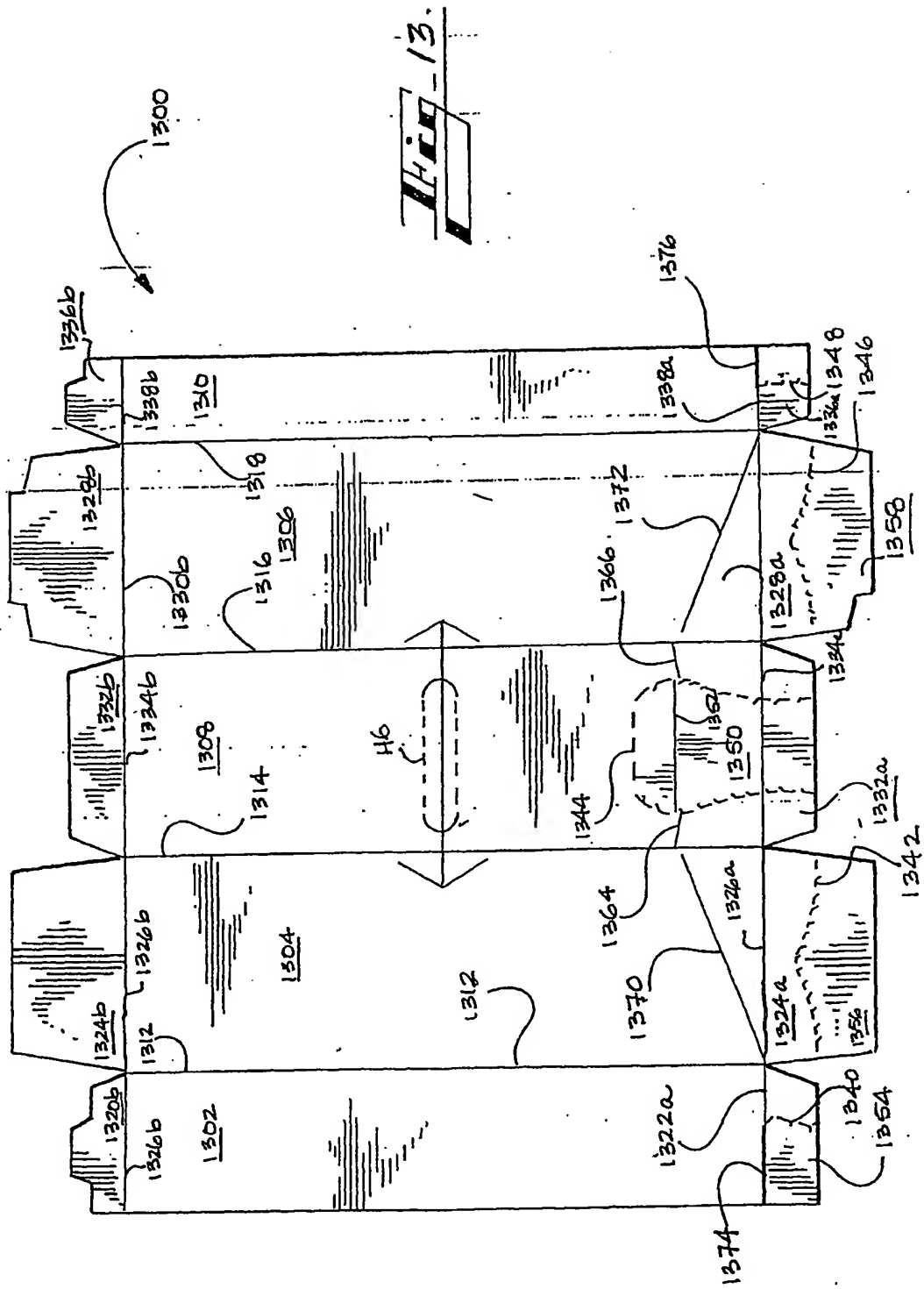
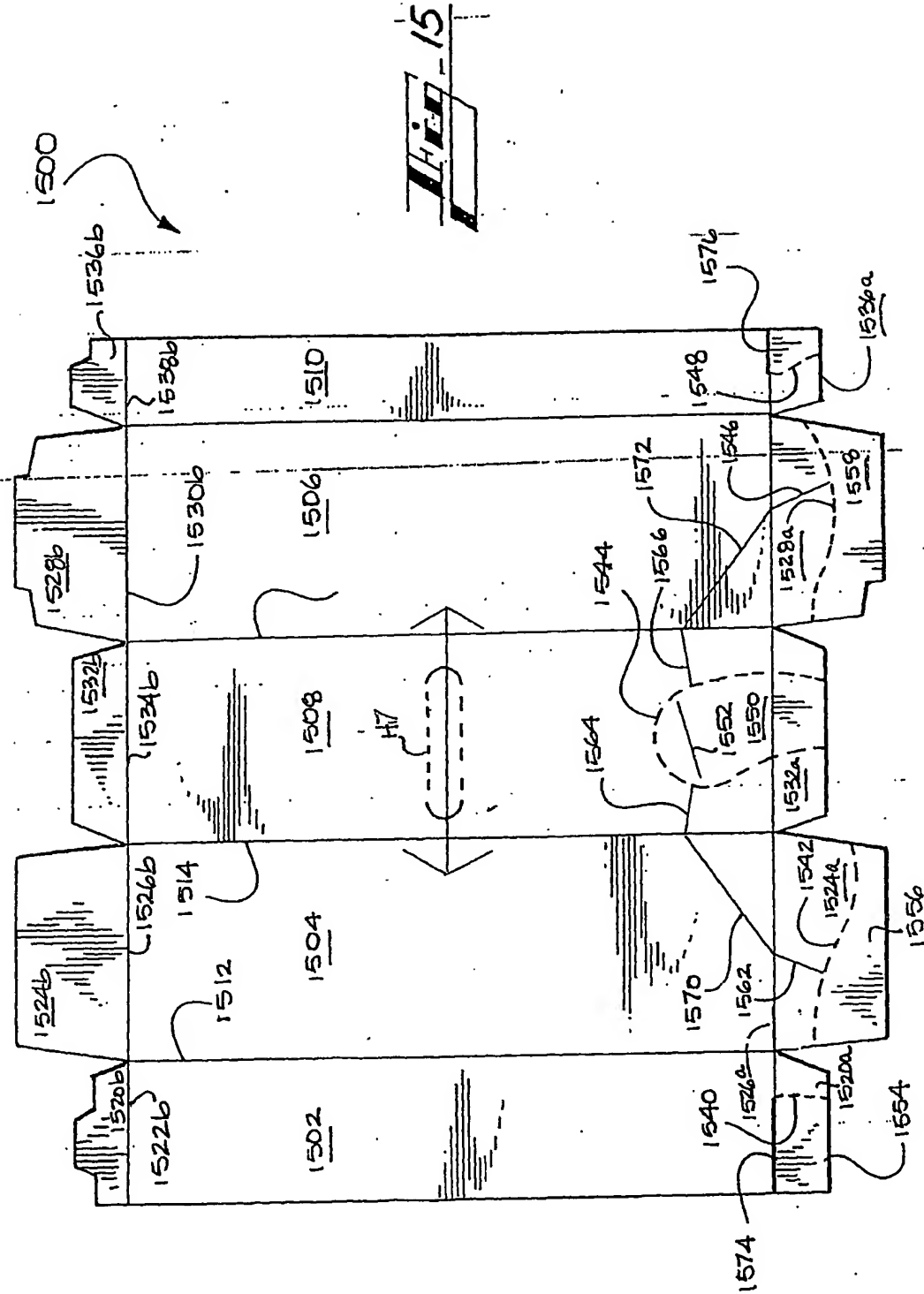


Fig. 12







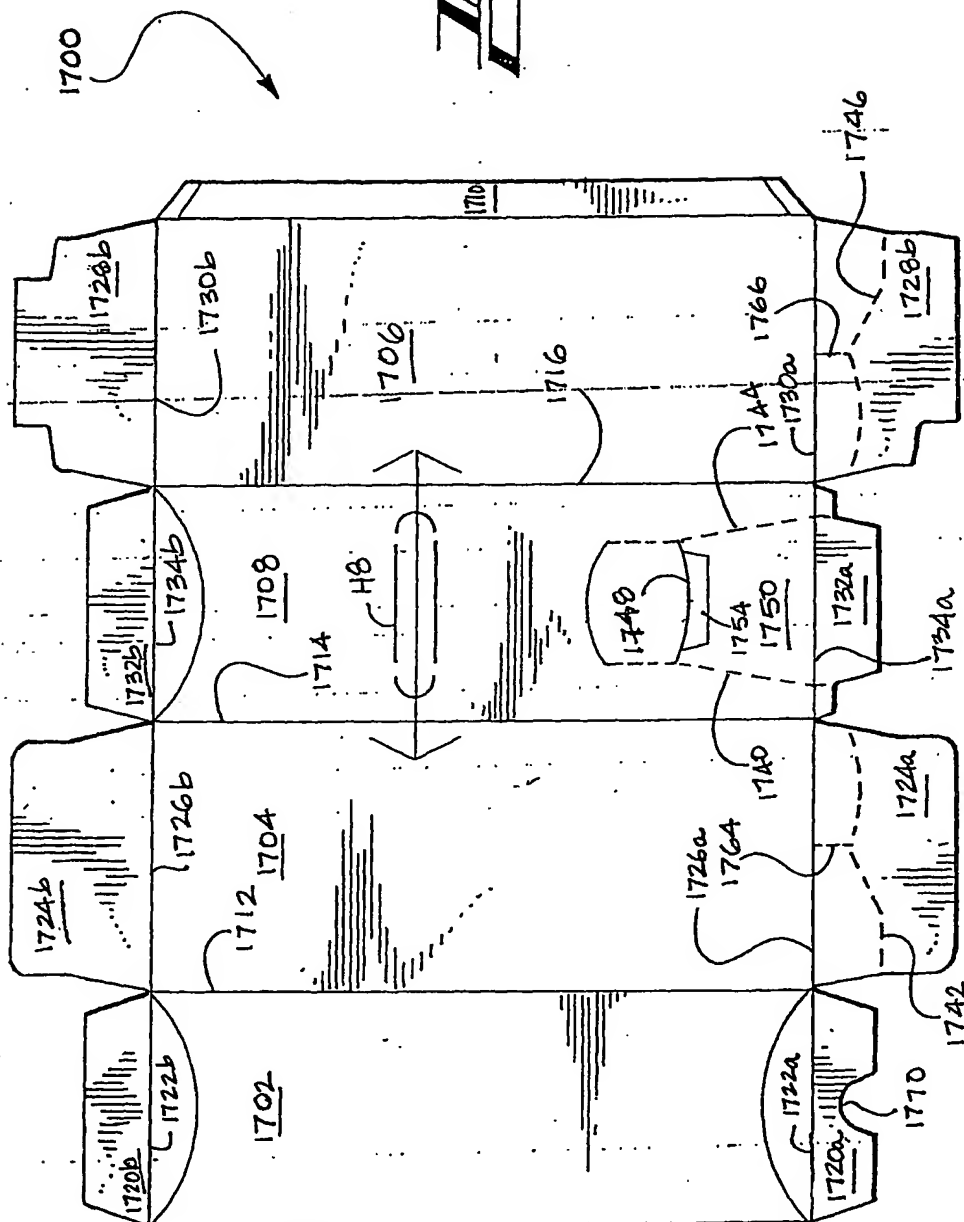
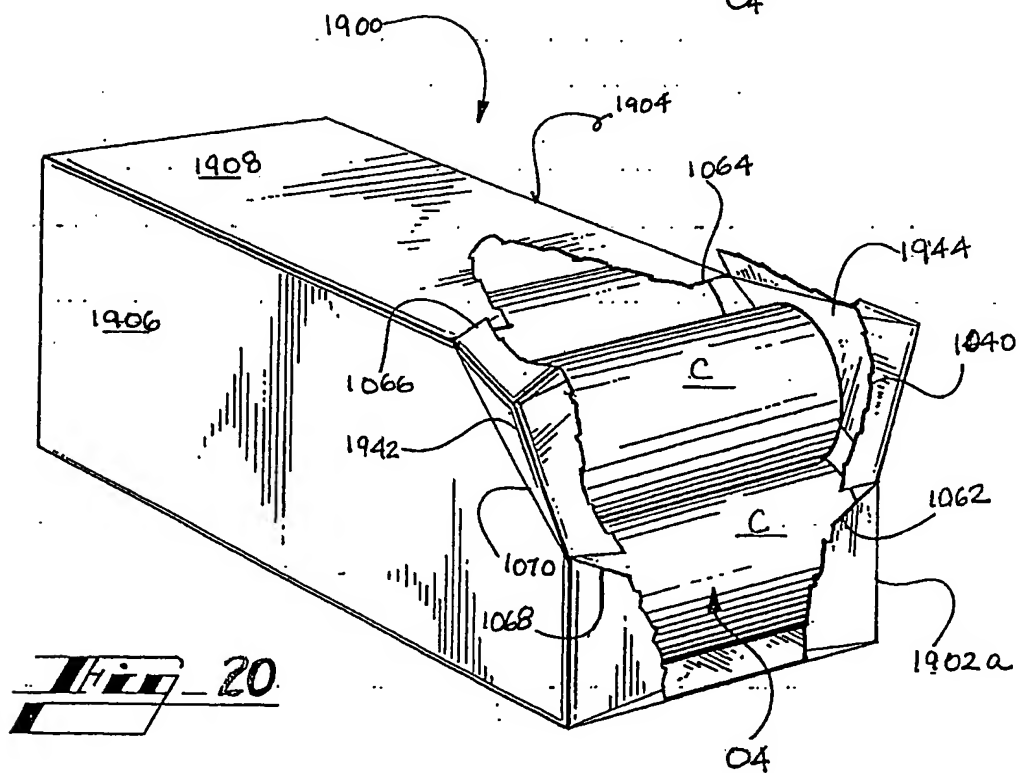
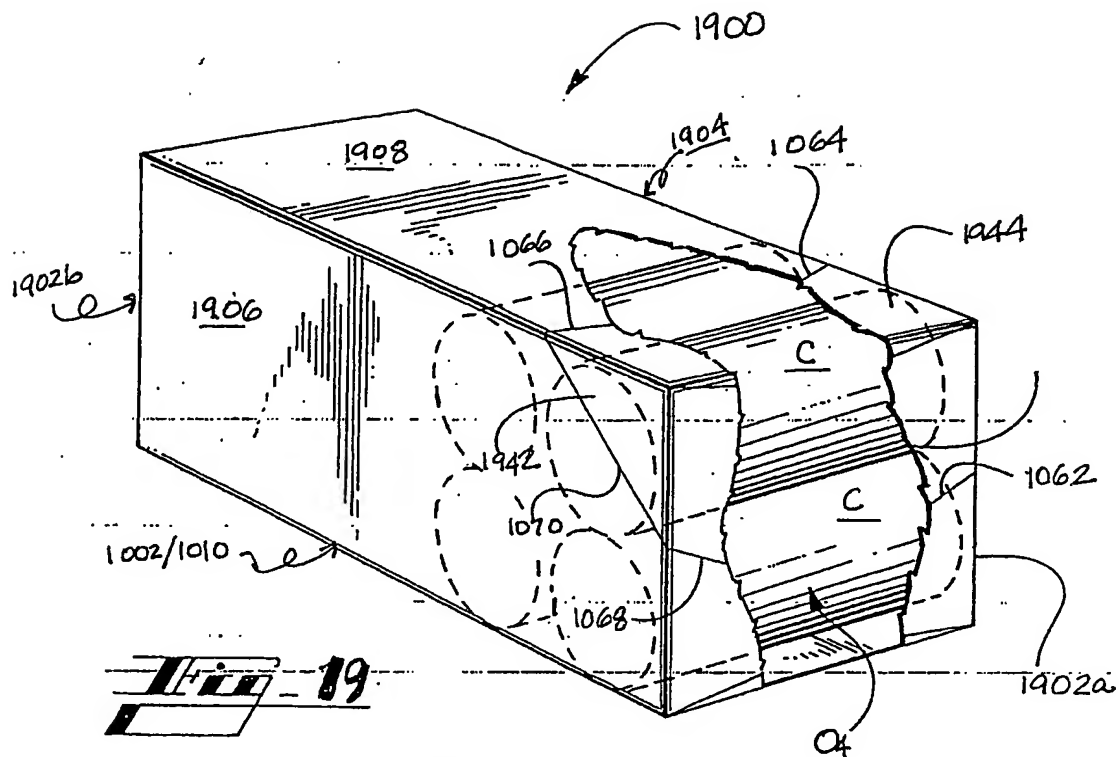
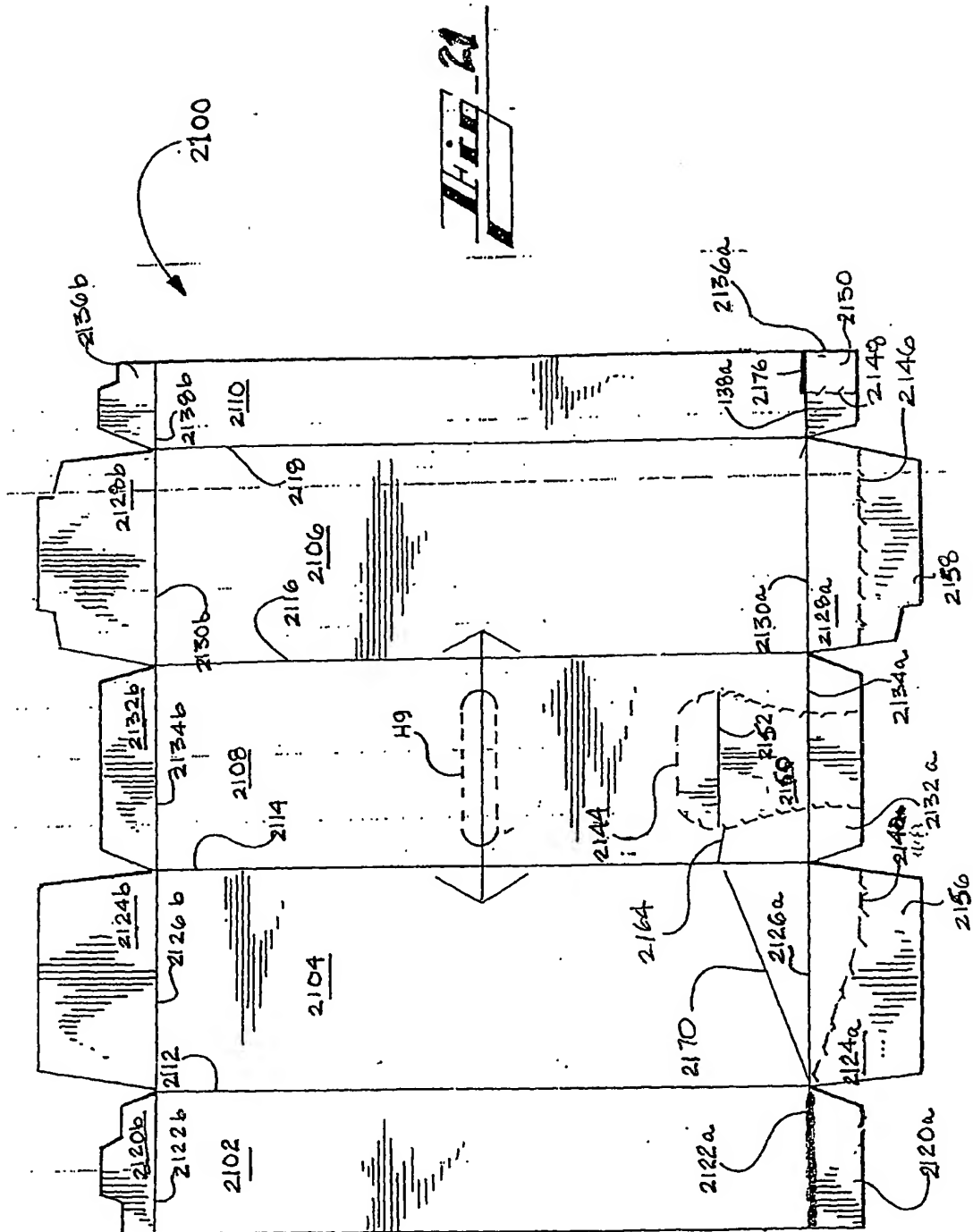
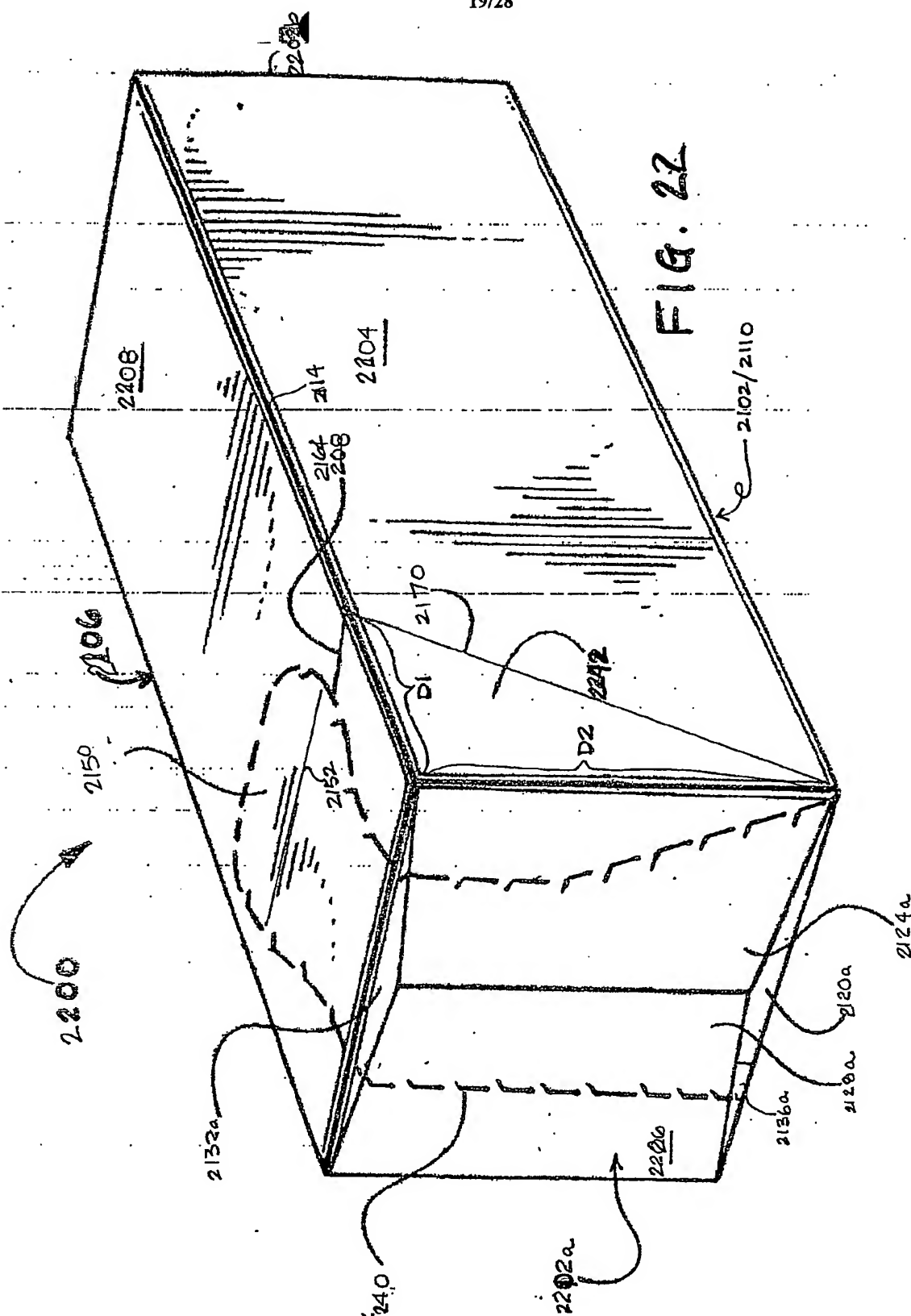
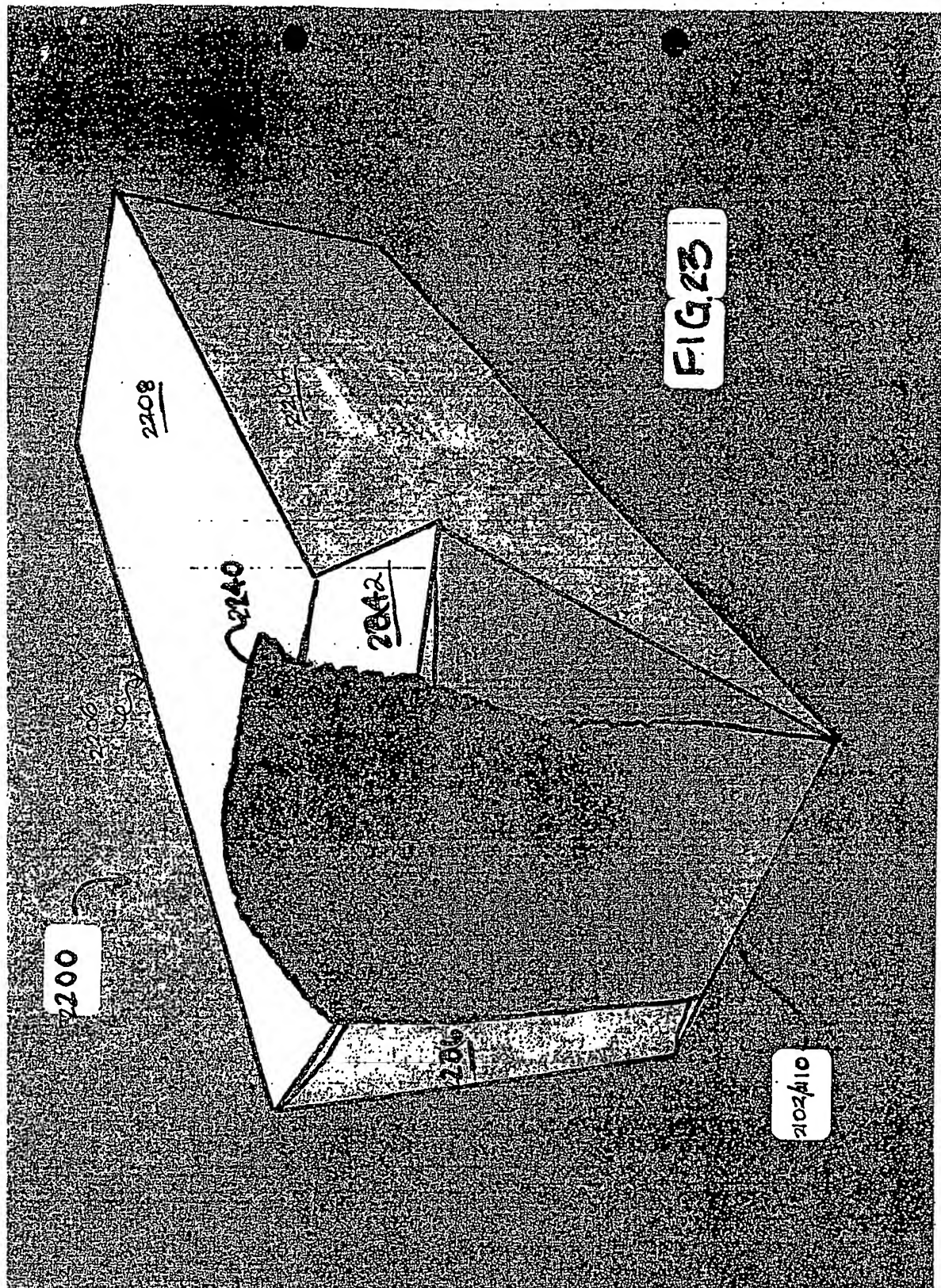


Fig. 17









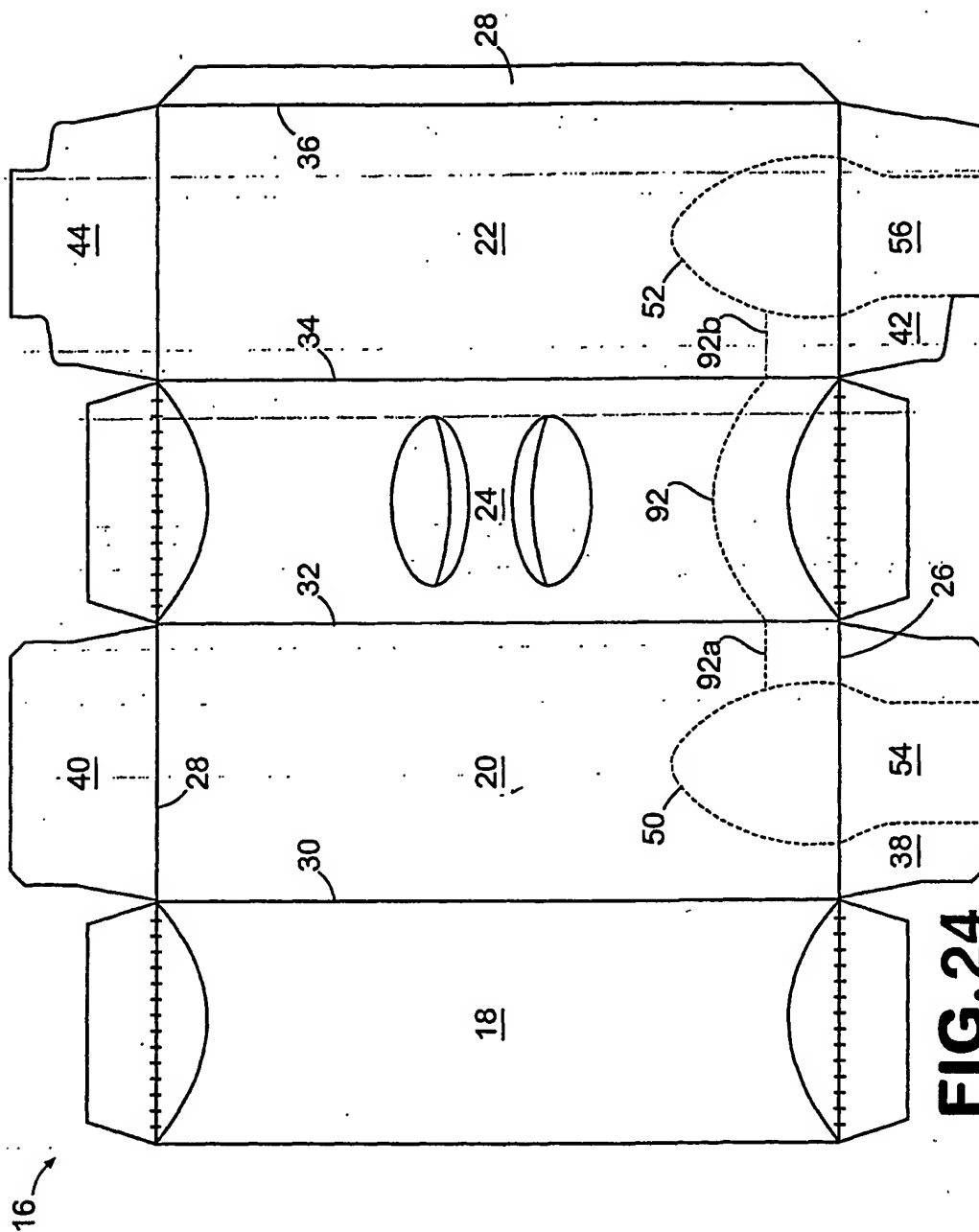


FIG. 24

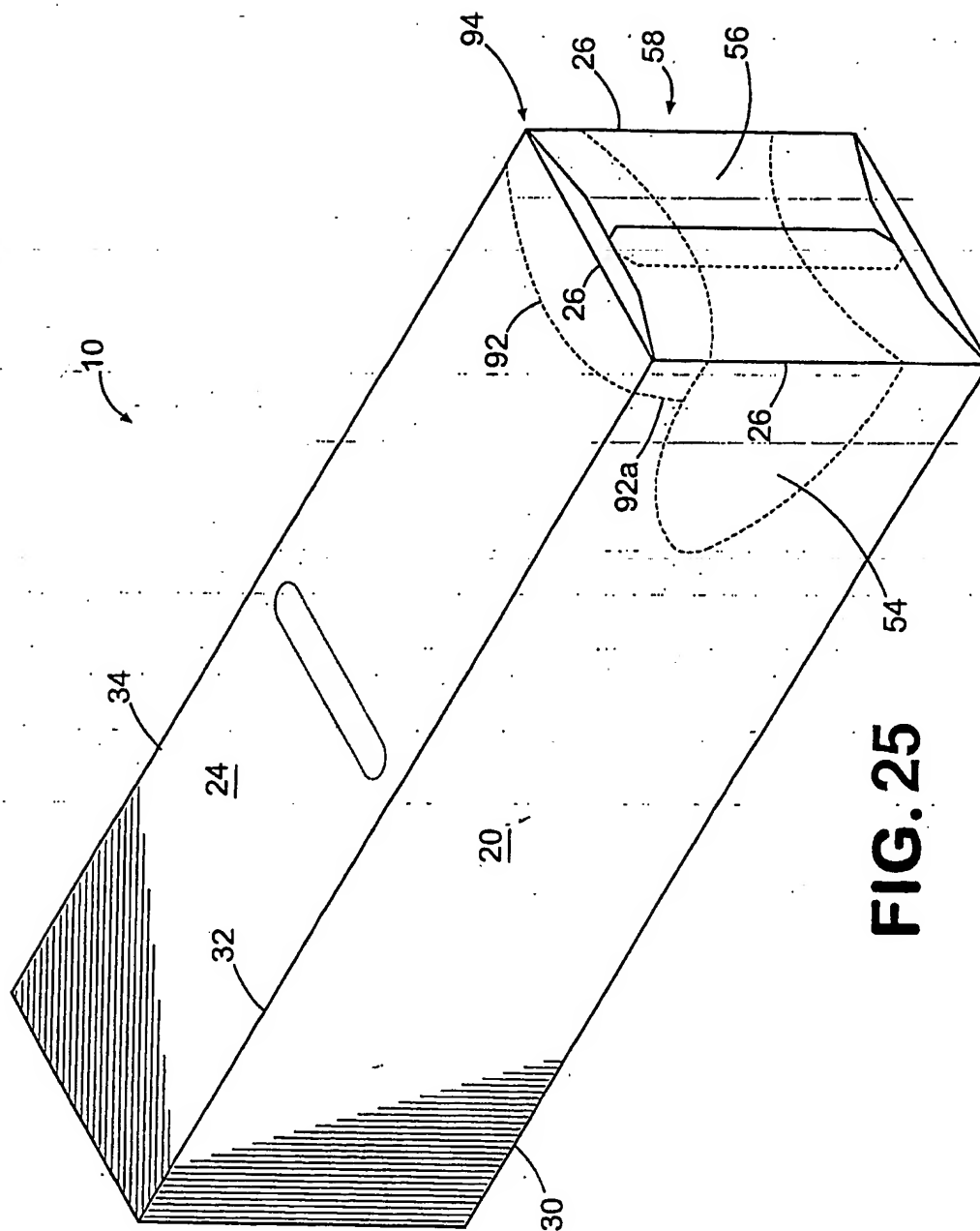


FIG. 25

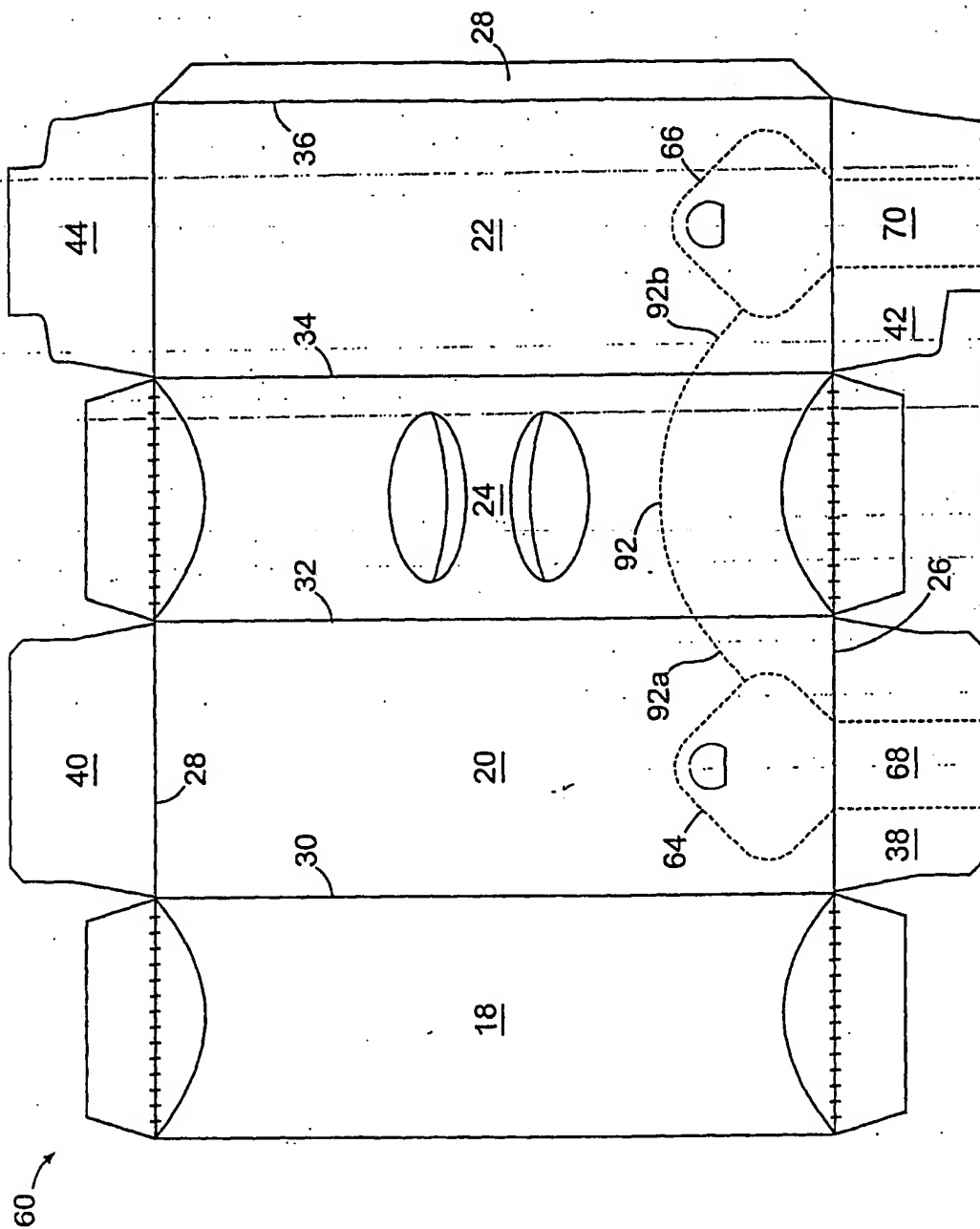


FIG. 26

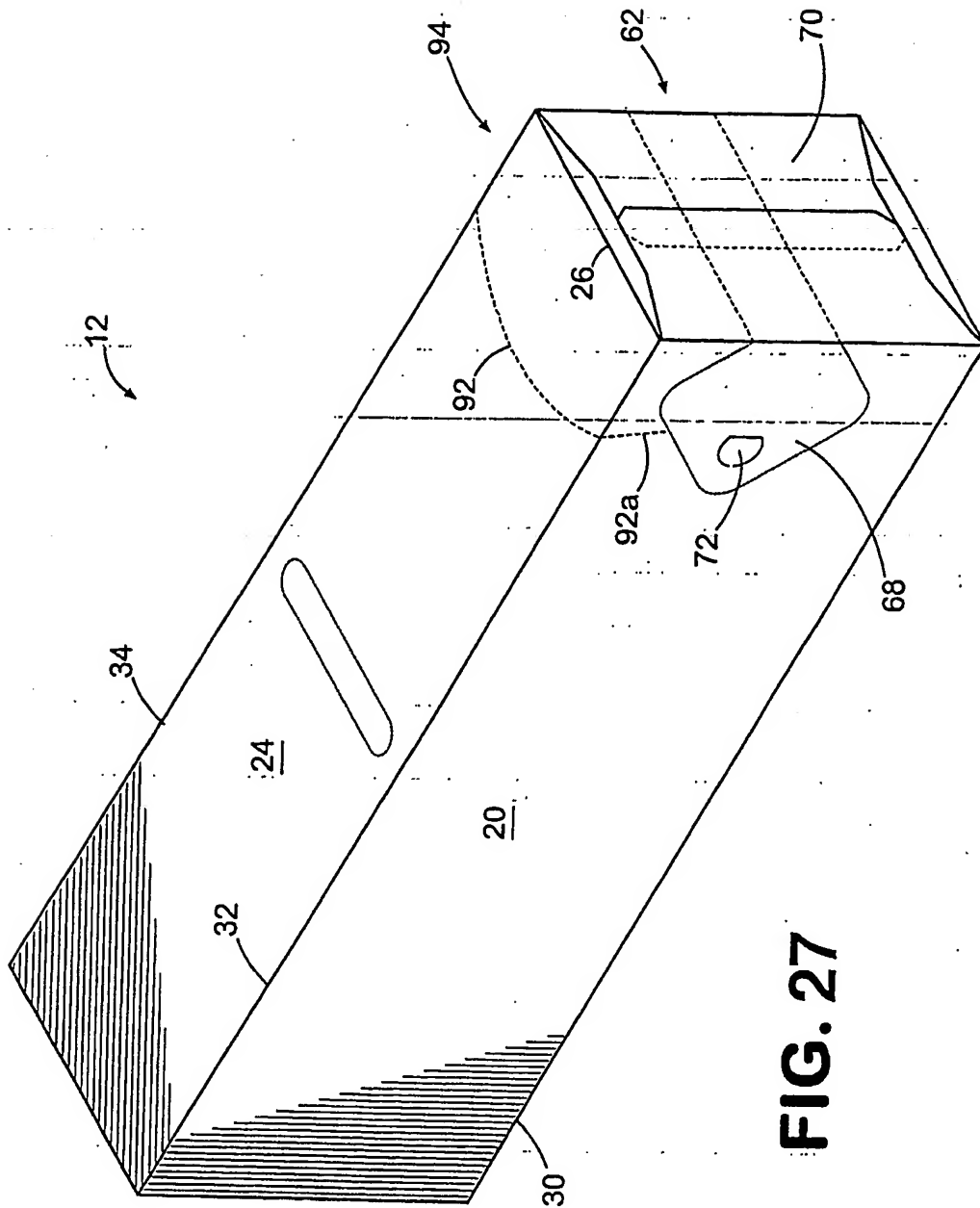


FIG. 27

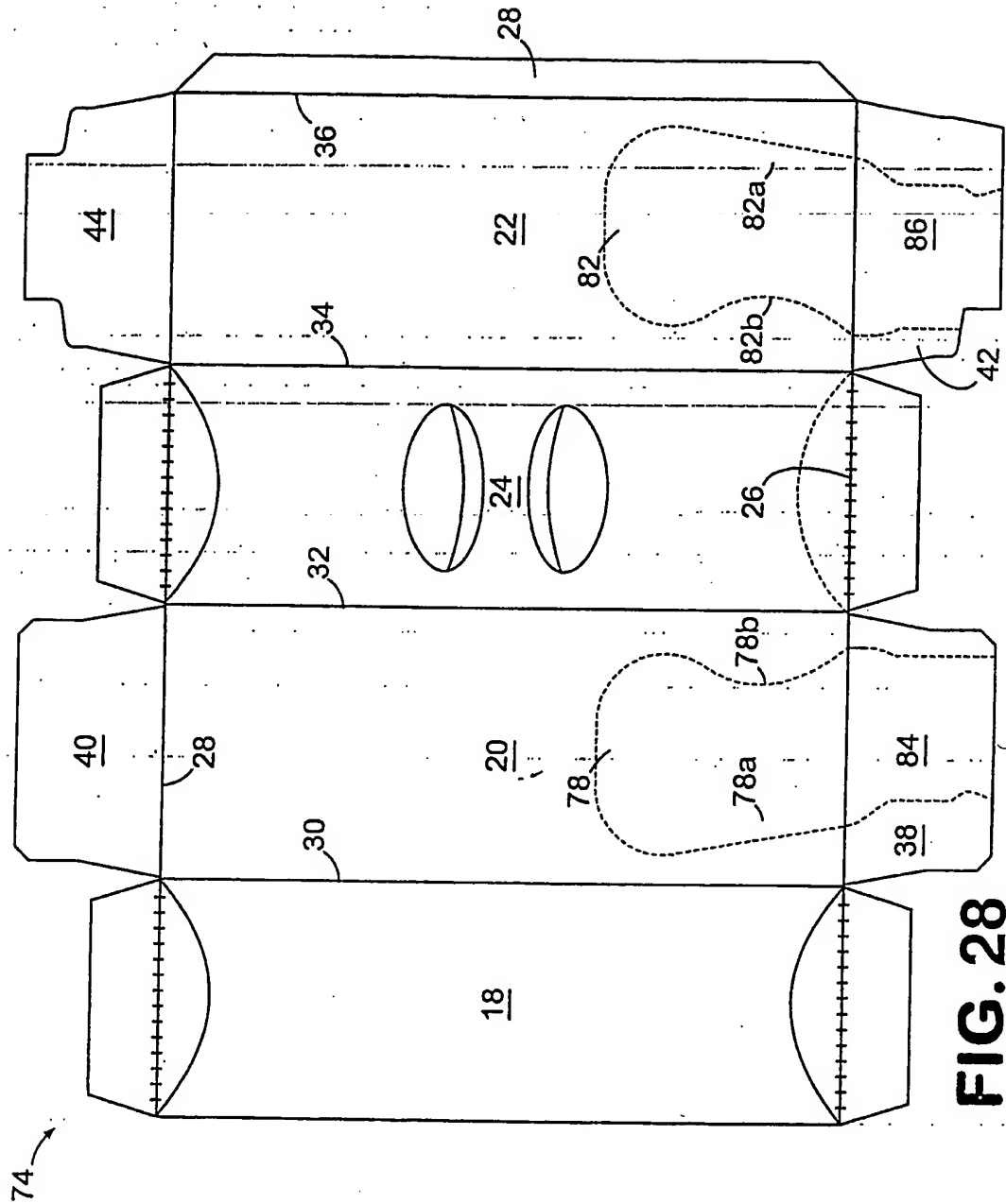


FIG. 28

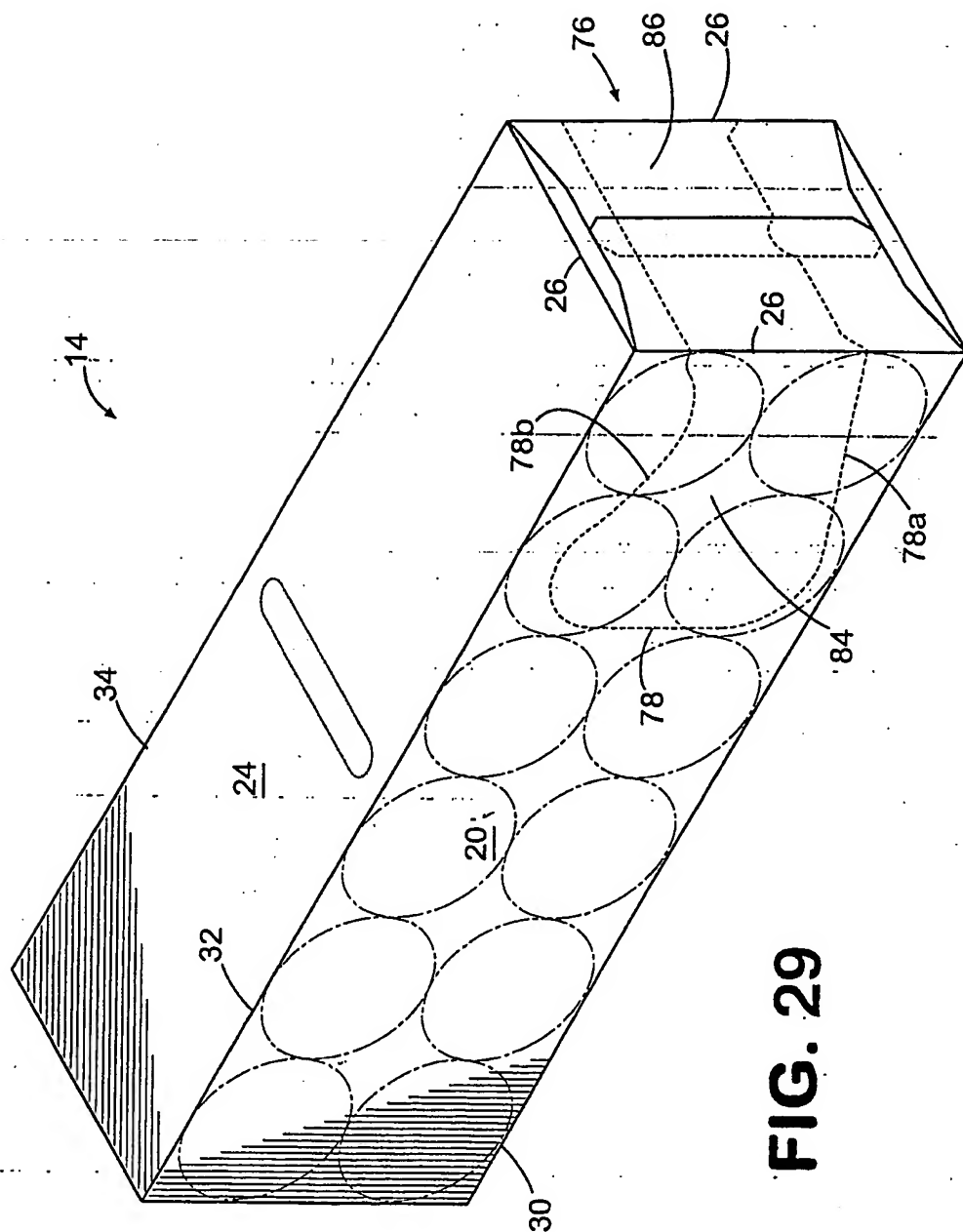


FIG. 29

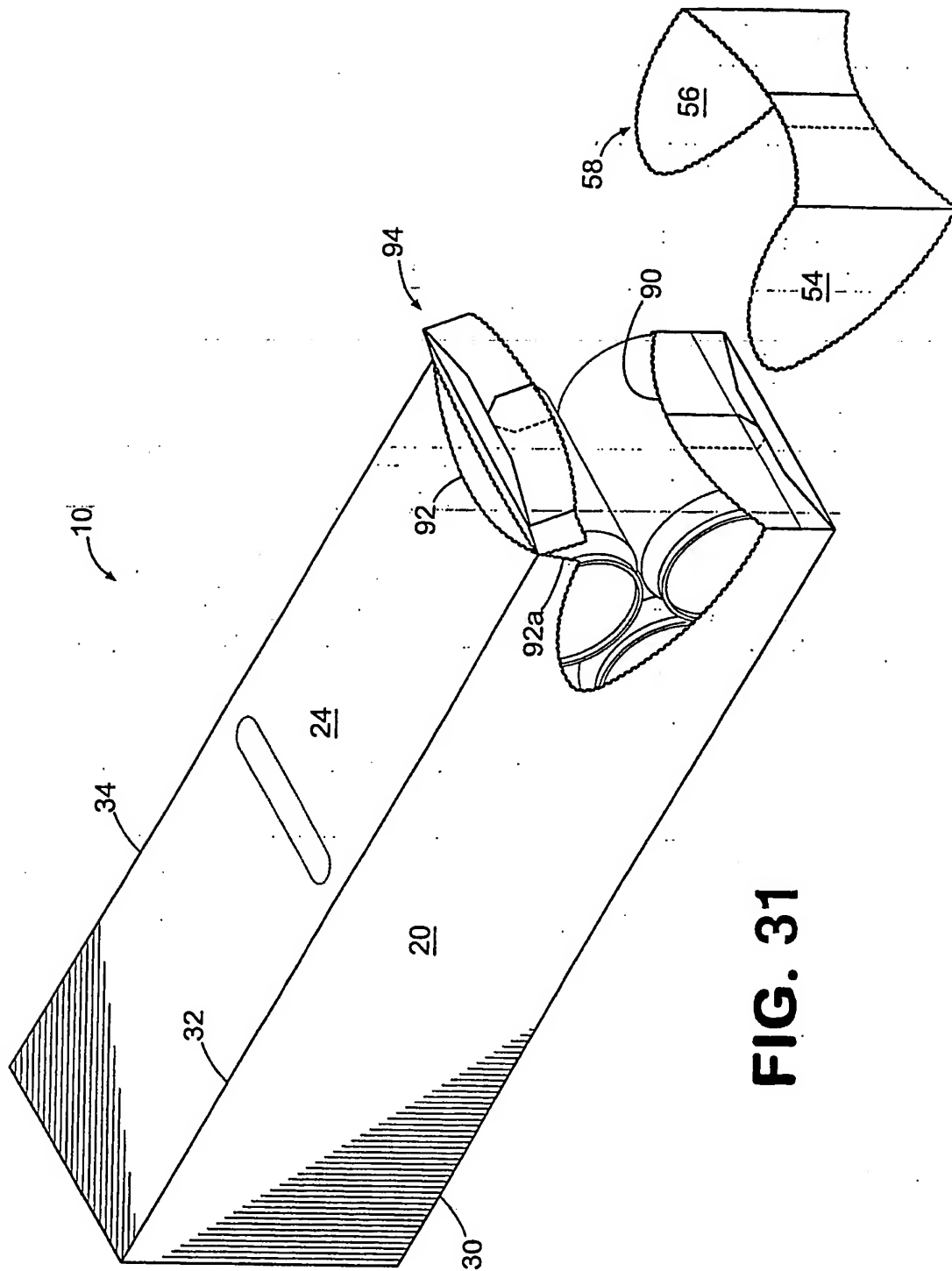


FIG. 31

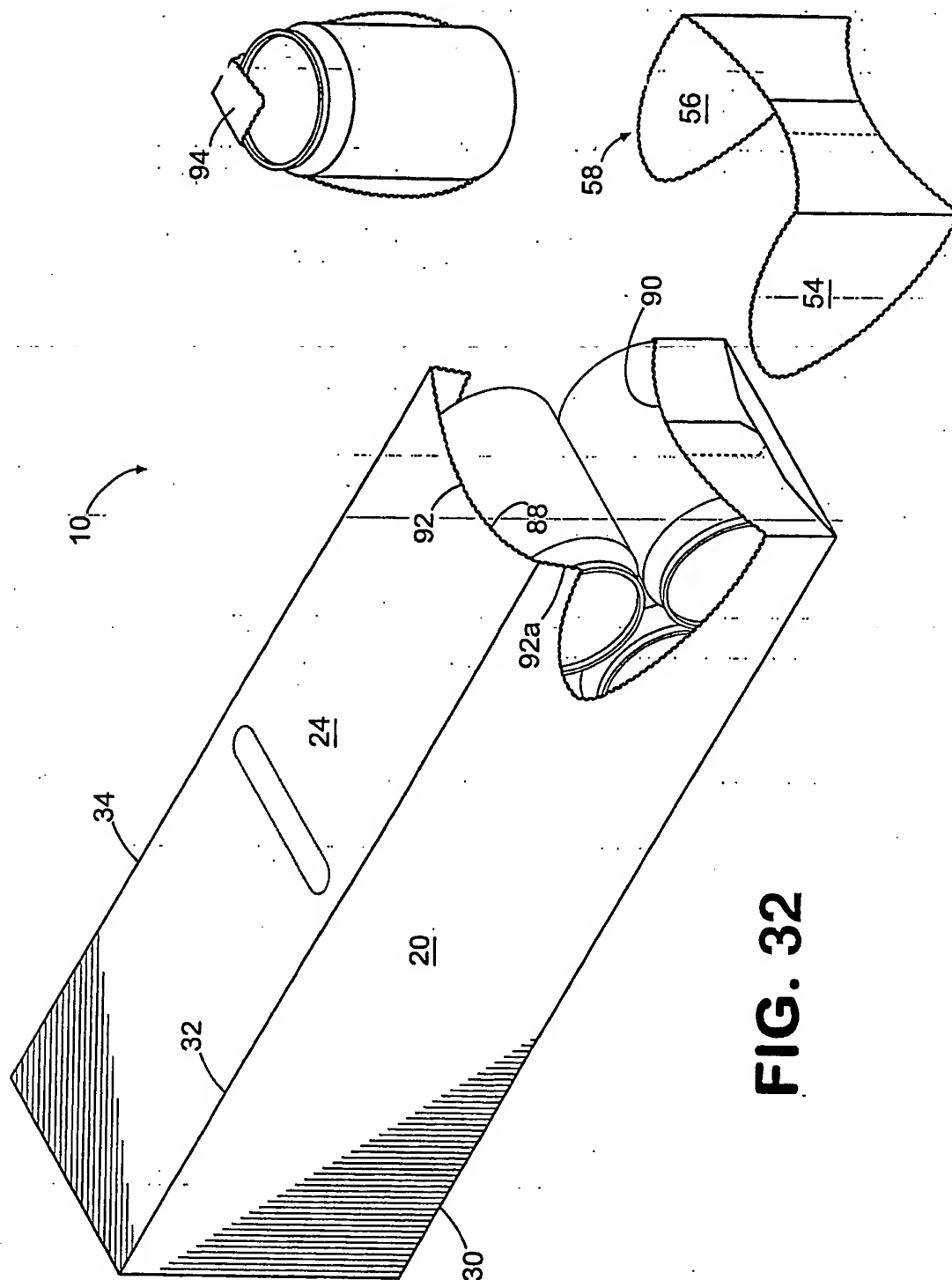


FIG. 32

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